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[Under 'General' are included the witnesses (mainly officers serving under the Government of India) whose evidence was recorded at Calcutta in 1918]

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QUESTIONS FOR THE ASSISTANCE OF WITNESSES.

I.—Financial Aid to Industrial Enterprises.

1. Please state if you have had any experience of the raising of capital for industrial enterprises? **Capital.**

If so, what difficulties have you found in doing so?

What suggestions have you to make for removing these difficulties?

2. What are the sources from which capital for industrial enterprises is principally drawn?

2 (*a*). Can you suggest any new sources from which capital may be drawn?

3. Do you know of any kinds of industrial enterprises where more concerns have been started than can be maintained in full time employment?

If so, please describe the general conditions.

4. What is your knowledge or experience of financial aid by Government to industrial enterprises? **Government assistance.**

5. What are your opinions on the following methods of giving Government aid to existing or new industries:—

(1) money grants-in-aid;

(2) bounties and subsidies;

(3) guaranteed dividends for a limited period, with or without subsequent refund to Government of the expenditure incurred in paying dividends at the guaranteed rate;

(4) loans, with or without interest;

(5) supply of machinery and plant on the hire-purchase system;

(6) provision of part of share capital of companies on the same basis as public subscriptions of capital;

(7) guaranteed or preferential Government purchase of products for limited periods and

(8) exemption for a limited period of the profits of new undertakings from income-tax; and exemption from any tax on an industry, or on any article used in an industry?

6. In which methods of Government assistance should there be Government control or supervision?

What should be the form of such control or supervision? (*E.g.*, Government audit or appointment of Government directors with defined powers for the period during which direct assistance lasts.)

7. What is your experience or opinion of Government pioneer factories? **Pioneer factories.**

[Note.—By pioneer factories are meant those established primarily to ascertain whether a new industry is commercially practicable?

By demonstration factories (see Questions 19 and 20) are meant those established primarily for giving demonstrations of, and instruction in, improved methods for industries which have been proved to be commercially practicable.]

8. In what ways and to what extent should Government pioneer industries?

At what stage should pioneer factories be either closed or handed over to private capitalists or companies?

What limits and restrictions, if any, should be imposed on the conversion of successful pioneering experiments into permanent Government enterprises?

9. In your experience what industries are hampered by the conditions under which they are financed as going concerns? **Financing agencies.**

Please describe the method of financing and its effect on the industry in each case.

10. In what ways is it possible to give more assistance to industrial undertakings by existing or new banking agencies?

10 (*a*). Do you think there is need of a banking law?

[See also question 39.]

11. Do you know of any industries which have been developed or assisted by the formation of co-operative societies? **Co-operative societies.**

What were the exact means adopted and what were the results obtained?

12. In your experience what are the industries for which co-operative societies should be encouraged?

What should be the organisation and special objects of these Societies?

12 (*a*). What suggestions have you to make for industrial development by means of Trade Guilds, such as exist in other countries?

How far should the State encourage the promotion of such Guilds?

Limits of Government assistance.

13. What principles should be followed in order to prevent Government aid competing with existing, or discouraging fresh, private enterprises.

14. Should there be any limitations on Government aid to a new enterprise if it competes with an established external trade?

II.—Technical Aid to Industries.

Technical aid in general.

15. What is your personal knowledge or experience of technical and scientific aid provided by Government to industrial enterprise?

16. What is your personal knowledge or experience of noticeable benefits received by local industries from researches conducted by Government departments?

17. On what conditions should the loan of Government experts be made to private firms or companies?

18. Under what restrictions and conditions would you allow publication of the results of researches made by a Government paid expert while attached to a private business?

Demonstration factories.

19. Can you suggest any industry for which Government demonstration factories should be adopted and on what lines? (See note below Question 7.)

20. Should any demonstration factories be instituted in your province?

Research abroad.

21. What has been your experience of the aid afforded by the Scientific and Technical Department of the Imperial Institute?

What are its advantages and disadvantages?

22. In addition to arrangements made for research in India, is it advantageous to have provision for research for special subjects in the United Kingdom?

If so, for what special purposes is it advantageous to conduct researches in England rather than in India?

23. In what ways can the Advisory Council for Research in the United Kingdom give assistance to Indian industries?

24. Can you suggest for this country any system, similar to that of the Advisory Council for Research in the United Kingdom, for referring research problems to Colleges and other appropriate institutions in India? (See Questions 75 and 76.)

Surveys for industrial purposes.

25. Does the existing knowledge of the available resources of the country—agricultural, forest, mineral, etc.—require to be supplemented by further surveys?

26. How should such a survey be organised?

What should be its precise objects?

27. How should its results be made most useful to industries?

27 (*a*). What is your experience or opinion of the value of Consulting Engineers appointed by Government to aid industrial enterprise by technical advice and by the supply of plans and estimates?

(*b*) Should such Consulting Engineers be allowed to undertake the purchase of machinery and plant for private firms or individuals? If so, under what conditions?

[See Question 63 *et seq.*]

III.—Assistance in Marketing Products.

Commercial museums.

28. What is your experience or opinion of commercial museums, *e.g.*, that in Calcutta?

29. If you think commercial museums should be developed and increased in number, what suggestions have you to make regarding their situation, arrangement and working?

Sales agencies.

30. What is your experience or opinion of sales agencies or commercial emporia for the sale as well as the display of the products of minor and unorganised cottage industries?

How should they be developed?

Exhibitions.

30 (*a*) Would travelling exhibitions of such industries be of advantage?

31. What is your opinion or experience of the value of industrial exhibitions?

32. Should Government take measures to hold or to encourage such exhibitions?

If so what should be the Government policy?

33. What should be the nature of such exhibitions?

Should they be popular in character, or should they aim merely at bringing sellers and buyers into contact?

34. Should trade representatives be appointed to represent the whole of India, in Great Britain, the Colonies and Foreign Countries? Trade representatives.

What should be the qualifications of these trade representatives?

How should their duties be defined?

35. In addition to these trade representatives would it be suitable in some cases also to have temporary Commissions for special enquiries?

36. Should provinces in India itself have trade representatives in other provinces?

How should such representation be arranged for?

37. Should the principal Government departments which use imported articles publish lists of these articles, or exhibit them in commercial museums? Government patronage.

38. With reference to the encouragement of Indian industries, have you any criticisms to offer regarding the working of the present rules relating to the purchase of stores by Government departments?

Have you any changes to propose in the rules themselves?

39. In what way is it possible to assist in marketing indigenous products by more banking facilities, either through existing agencies (such as the Presidency Exchange, Joint Stock and Co-operative Credit Bank) or through new agencies (such as Industrial and Hypothec Banks)? (see also Question 10.) Banking facilities.

IV.—Other Forms of Government Aid to Industries.

40. What conditions should control the supply of Government-owned raw materials (*e.g.* forest products) on favourable terms? Supply of raw materials.

41. Is there any check at present imposed on industrial development in your province by the land policy of Government? Land policy.

If so, what remedies do you suggest?

(Note.—The expression "land policy" is intended to cover laws and regulations relating to settlements, the Government assessment, rents, tenant rights, permission to use land for industrial purposes, and generally all matters connected with the ownership and use of land.)

42. On what principles should Government give concessions of land for the establishment of new, or the development of existing, industries?

43. What criticisms have you to make regarding the working of the present law for the acquisition of land on behalf of industrial companies?

What modifications of the law do you recommend?

43. (*a*) In what ways and on what terms can Government assist in the provision of subterranean or surplus surface water for industrial purposes.

V.—Training of Labour and Supervision.

44. (*a*) Do you think that the lack of primary education hinders industrial development? General.

(*b*) What has been done in any industry of which you have had experience to improve the labourers' efficiency and skill?

45. What steps do you consider should be adopted to improve the labourers' efficiency and skill—

(*a*) generally, and

(*b*) in any industry of which you have had experience?

46. What special knowledge or experience have you of the training of apprentices in factories and workshops? Apprenticeship system and industrial and other schools.

47. What advantages have you observed to follow from the establishment of industrial schools?

48. On what lines should these two systems of training (*e.g.*, apprenticeship system and industrial schools) be developed and co-ordinated?

49. What has been your experience of day schools for short-time employees, or of night schools?

How should these be developed?

50. Should industrial and technical schools and commercial colleges be under the control of the Department of Education or of a Department of Industries?

What measures should be adopted in order that these two departments should work in unison in controlling industrial schools?

51. What measures are necessary for the training and improvement of supervisors of all grades and of skilled managers? Training of supervising and technical staff.

52. What assistance should be given to supervisors, managers and technical experts of private firms to study conditions and methods in other countries? (See Question 77.)

53. In what circumstances and under what conditions should industries assisted by Government be required to train technical experts?

Mechanical engineers.

54. Is there a want of uniformity in the standard of examinations for mechanical engineers held in the various provinces where engineers in charge of prime movers are required in certain cases to be certificated ?

If so, should measures be adopted to make such tests uniform so that the Local Governments and Administrations may reciprocate by recognising each other's certificates ?

55. If the law in your province does not require any qualifications in an engineer in charge of a prime mover, have you any criticisms or suggestions to make ?

VI.—General Official Administration and Organisation.

56. What provincial organisation exists in your province for the development of industries ?

What criticism have you to make regarding its constitution and functions ?

57. What organisations do you recommend for the future development of industries in your province ?

Should there be a Board of Industries ?

If so, what should be the functions of such a Board ?

Should it be merely advisory or should it have executive powers with budgetted funds ?

58. If you recommend an Advisory Board, how should it be constituted ?

59. If you recommend a Board with powers, what should be its constitution and how should its powers be defined ?

60. Should there be a Director of Industries ?

What should be his functions ?

Should he be a business man, or a non-expert official, or a technical specialist ?

What other qualifications should he possess ?

61. If you recommend both the formation of a Board of Industries and the appointment of a Director of Industries, what should be the relations between the Board of Industries, the Director of Industries and the Provincial Government or Administration ?

62. What form of machinery do you propose in order to correlate the separate activities of the various provinces as regards industries ?

Is it practicable to form an Imperial department under a single head ?

If so, what should be the functions of such a department ?

Cottage industries.

62 (*a*). Should there be special measures taken or special sections of a Department of Industries organised for the assistance of cottage industries ?

62 (*b*). Please explain in detail what should be the Government policy as regards cottage industries and how it should be carried into effect ? In this connection, see especially Questions 11, 30, 64 and 72.

62 (*c*). What cottage industries do you recommend should be encouraged in this way ?

VII.—Organisation of Technical and Scientific Departments of Government.

General.

63. Are there in your province any technical and scientific departments which are capable of giving assistance to industries ?

If so, what criticisms have you to make regarding their organisation ?

What changes do you recommend ?

Imperial department.

64. In order to aid industrial development do you recommend the formation of any new Imperial Scientific and Technical Departments ?

If so, for what subjects or natural groups of subjects ?

65. How should such an Imperial department be constituted and recruited ?

66. What should be the powers of the head of the department ?

If he has executive control of the department, what should be his relationship to the Imperial Government ?

67. What should be the relationship of an expert, whose services are loaned by the Imperial department to a Local Government, with the Local Government and the latter's Department of Industries ?

Provincial Departments.

68. For what subjects should Local Governments engage their own experts or organise their own technical and scientific departments ?

69. Under what direct control should these experts and departments be placed ?

70. On what terms should these experts be employed ?

Technological institutions.

71. What is the most suitable way of developing technological research institutions, such as the Indian Institute of Science ?

71 (*a*). Should there be a Technological Institute for each province, and should such Institutes be allowed to develop as independent units or should they be fitted into a general development scheme for the whole of India, with a central Research Institute ?

72. As regards investigation and research should each Institute be general in its activities and interests, or should each deal with limited group of related subjects ?

73. Should there be any Government control ?

If so, should this control be Imperial or should it be purely provincial or local ?

74. Is it desirable that measures should be taken to co-ordinate and prevent unnecessary overlapping of the research activities in Government Technical and Scientific Departments, special Technological Institutes and University Colleges ? Co-ordination of research.

If so, what are your suggestions ?

75. What noticeable results have followed from the institution of the Indian Science Congress ?

76. Can you suggest any ways in which the Congress might become more useful in assisting industrial development ? (See Question 24.)

77. What encouragement should be given to Government technical and scientific experts to study conditions and methods in other countries ? (See Question 52.) Study of foreign methods.

78. What difficulties have you experienced in consulting technical and scientific works of reference ? Reference libraries.

79. Have you any suggestions to make regarding the establishment of libraries of such works ?

80. Do you think that the establishment of a College of Commerce is necessary in your province ? Colleges of commerce.

If so, on what lines should it be organised ?

81. In what ways do you expect such a college to assist industrial development ?

81 (*a*). In what ways can Municipalities and Local Boards assist in promoting industrial and commercial development ?

VIII.—Government Organisation for the Collection and Distribution of Commercial Intelligence.

82. Have you any criticisms to offer on the present system of collecting and distributing statistics by the Director of Statistics ? Statistics.

What changes do you suggest ?

83. Have you any criticism to offer on the present system of collecting and distributing commercial intelligence by the Director-General of Commercial Intelligence ? Commercial intelligence.

What modifications do you suggest ?

84. What advantages have you found in the issue of the "Indian Trade Journal ?" Industrial and trade journals.

85. Should Government establish or assist industrial or trade journals, either for general or special industries, which would be of real use to persons actively engaged in industries ?

86. What proposals do you make for the dissemination of information of this kind through the various vernaculars ?

87. What advantages have you known to follow the issue of special monographs on industrial subjects or publications like those of the Forest and Geological Departments ? Other publications.

What measures do you advise in order to increase the usefulness of these publications ?

88. Are there any other directions in which Government could collect and publish information of a kind likely to assist industries and trades ?

IX.—Other Forms of Government Action and Organisation.

89. Are there any products for which a system of Government certificates of quality should be established ? Certificates of quality.

For what products should such certificates be compulsory, and for what products voluntary ?

90. What should be the organisation for testing each class of products and granting certificates ?

91. Are there any classes of materials for manufacture or of manufactured articles for the adulteration of which penalties should be imposed ? Prevention of adulteration.

92. For each such class of goods what organisation do you suggest for purposes of inspection and prosecution of offenders ?

93. Have you any other suggestions to make in regard to the prevention of misdescription of goods generally ? Misdescription.

94. What is your opinion on the present state of Indian law relating to marks and descriptions of proprietary and other articles of trade ? Trade marks and trade names.

95. Have you any criticisms or suggestions to make regarding the existing law and regulations relating to patents ? Patent laws.

Registration of partnerships.

96. Is it desirable and practicable in the interests of trade, to introduce a system of registration or disclosure of partnerships?

Roads, railways and waterways.

97. To what extent does the lack of transport facilities by road, rail or water hinder industrial development in your province?

Have you any specific recommendations to make?

98. Have you any criticisms to offer regarding railway freights, the classification of goods, the apportionment of risk, and the regulation of rates?

What are your proposals?

99. Are there any railway extensions necessary in your province to develop new or to extend existing industries?

100. Similarly, are there any waterways which should be constructed, extended or improved?

Shipping freights.

101. Are you aware whether the external trade or internal industries of the country are handicapped by any difficulties or disadvantages as regards shipping freights?

Can you suggest any remedies?

Hydro-electric power surveys.

102. What has been done in your province towards ascertaining the possibilities of developing hydro-electric power?

Should further investigation be made in this matter?

102(*a*). Have you any criticisms to make regarding the effect of the Electricity Act on industrial enterprise?

Mining and prospecting rules.

103. What difficulties have been experienced in the working of the Mining and Prospecting Rules (1913)?

104. Are there any minerals that are essential for industries of Imperial importance that ought to be developed at public expense? (*E.g.*, minerals of direct importance for the manufacture of munitions of war, or minerals ordinarily obtained in commerce from one country only.)

Forest Department.

105. From the point of view of industrial enterprise, have you any criticisms to make regarding the policy and working of the Forest Department?

What suggestions do you make.

106. What measures are practicable to reduce the cost of assembling raw forest products?

107. To what extent is it practicable to concentrate special kinds of these in limited areas?

108. What noticeable deficiencies in forest transport are known to you?

What suggestions do you make for their removal?

Jail competition.

109. Have you any complaints to make regarding competition by jail industries?

X.—General.

110. What suggestions have you to make for the development of any industry in which you have been actively concerned or interested?

111. Does your experience suggest to you any new industry for which India seems peculiarly suited on account of its resources in raw materials, labour and market?

112. What supplies of raw materials are known to you of which the use in industry or trade is retarded by preventible causes?

What are these causes, and how should they be removed?

112(*a*). Have you any suggestions to make regarding the utilization of waste from raw materials?

112(*b*). Have you any suggestions to make regarding Government aid in the improvement of raw material, such as, cotton, silk, sugarcane, etc.?

112(*c*). What industries in the country are dependent on the importation of raw materials and partly manufactured articles from abroad?

113. Do you know of any supplies of raw materials for which there is a good case for investigation with a view to their development?

Evidence taken by the Indian Industrial Commission, 1917-18.

LAHORE.

MR. R. MCINTOSH, *Conservator of Forests, Punjab.*
WITNESS No. 360.

WRITTEN EVIDENCE.

Pioneer factories.

THE only pioneer factory of which I have personal experience is the resin distillery maintained by the Punjab Government at Jallo some 10 miles from Lahore. This factory is used for obtaining rosin and turpentine by distillation from the crude resin of the chir-pine (Pinus Longifolia). The Forest Department first commenced to distil resin at Nurpur about the year 1900 and afterwards moved its small factory to Shahdara just outside Lahore. The factory was a makeshift one and distillation was effected by the direct heat process. In 1914 the Punjab Government decided to erect an up-to-date distillery at Jallo and purchased a French plant by which distillation is effected by means of steam. The plant cost about Rs. 27,000 and the total expenditure up to date incurred on the plant and buildings has been just under a lac of rupees. The new distillery commenced working in the spring of 1915 and works from 6 to 8 months a year dealing with about 25,000 maunds of crude resin. It can deal with as much as 35,000 maunds of resin if necessary.

The gross profit obtained from working the distillery during the forest year 1916-17 was Rs. 1,44,000 and the net profit on the year's working was Rs. 1,16,000. This pioneer factory has undoubtedly had a good start on account of the peculiar conditions arising out of the European War, as, with freight difficulties, the demand for Indian rosin and turpentine has been very great indeed. At the same time I should like to state that analysis of both the rosin and the turpentine manufactured at Jallo shows that these products are capable of competing with the produce of both America and France.

Jallo rosin is at present fetching as much as Rs. 18 a maund and first quality turpentine can be sold for Rs. 4-6-0 a gallon. So entirely is the trade dependent on Indian rosin and turpentine that higher prices even than these could be secured, but it is not desirable to raise the price of those two products beyond the figure at which American products could be landed in India in pre-war times. There is a demand at present for the entire output of Indian turpentine but some difficulty is already being experienced in disposing of the whole of the rosin within India. The industry is therefore not capable of great expansion until an endeavour is made to introduce Indian products into markets situated outside India. It is proposed to take this matter in hand at once in order to secure the full benefit of existing war conditions.

When Government undertakes to pioneer industries I consider that in cases where the raw material dealt with is private property the action of Government should be confined to starting and working factories until such time as the industry is capable of producing an article suitable to the demand. As soon as that has been effected I consider that any pioneer factory started by Government might well be handed over to private capitalists or companies. Where however the raw material dealt with is already the property of Government I consider that Government is justified in retaining the development of the industry in its own hands and in continuing to utilise to the fullest extent its own raw material. Even where pioneer factories deal with raw materials which is private property there must sometimes be occasions when in order to ensure the continued production of a standard product it is essential that Government should continue to retain the pioneer factories in its hands. In addition to the pioneer resin factory the Punjab Government in its Forest Department has for some time past been endeavouring to demonstrate the possibilities of certain other industries. These are :—

(*a*) Wood pulp.
(*b*) Olive cultivation.
(*c*) Fruit culture.
(*d*) Silk culture.

Wood pulp.

Regarding wood pulp manufacture the Punjab Government some 3 years ago gave a very considerable concession to a private individual in the shape of fir timber at reduced prices for the purpose of wood pulp manufacture. For various reasons the concessionaire has made no progress with the development of this industry and the concession has recently expired. There is no doubt that in the Punjab hills there is a large amount of timber suitable for the production of wood pulp but this industry is not one which I think the Forest Department could develop by starting a pioneer factory. The details of the manufacture of the pulp are too technical to be undertaken except by specialists and I think that in this respect the development of this industry must await the time when private capitalists or companies are ready to take it up.

Olive culture.

Regarding olive culture the Punjab Government has within the last 6 years been endeavouring to introduce the European olive industry in suitable areas in the Punjab and it now has a hundred acres of well-stocked grafted European olives of ages varying from 6 years downwards. The trees are now beginning to bear fruit and it remains to be seen if the oil or the pickled fruit can compete with European products. Government has spent some Rs. 20,000 on this experimental cultivation and has lately been endeavouring to arrange for a syndicate to take over and extend the area under olive cultivation. Negotiations have however fallen through and Government intends to continue the experiment through the agency of the Forest Department until it is known whether the olive oil and pickled olives are of a quality capable of competing with European products. Should this prove so there are large areas in the western Punjab already under Indian olives which could be converted into European olive gardens and a new industry thus awaits development.

Fruit culture.

Regarding fruit culture during the last 8 years Government has been endeavouring to popularise fruit growing in the hills. With this end in view the Forest Department has planted some 50 acres of orchard in Kulu and has done a considerable amount of work in distributing fruit trees and in grafting village trees throughout Kulu. The orchards are now coming into bearing and are a very valuable property. But it must be admitted that the villagers so far have not shown any signs of being anxious to participate in fruit culture.

Silk culture.

Regarding silk culture the Forest Department for some years has assisted the Salvation Army in its endeavours to reintroduce the silk industry in the Punjab and has allowed the Salvation Army free access to some 9,000 acres of mulberry plantation situated about 40 miles from Lahore. Should the Salvation Army succeed in its endeavours to promote silk culture at Changamanga, the Forest Department will be able to allow the collection of mulberry leaves over another 50,000 acres of mulberry plantations which are being formed at the present time in the various new colonies of the Punjab.

Financing agencies.

In my opinion the wholesale timber trade in the Punjab is seriously handicapped by what I believe is the universal practice of financing this industry on borrowed capital. This prevents the firms engaged in the timber trade from being willing to incur any considerable expenditure except in cases where Government is prepared to give the firm a forest on a long lease. The giving of forests on long leases is generally objectionable as it raises difficulties in the way of ensuring that Government secures its fair share in such rise in the value of timber as may take place during the currency of the lease. The obvious remedy for this state of affairs is that Government should participate in the timber trade and extract departmentally the timber from its own forests, thus avoiding excessive interest charges on the capital used in exploiting its forests.

Industrial surveys.

In the case of forests it is beyond doubt that considerable benefit would be derived by a further survey of the Indian forests. The properties of most of the timbers and of many of the minor products are, speaking generally, quite unknown. I am confident that India (including Burma) possesses many timbers of great value which have hitherto been practically entirely unused because the properties of these timbers are unknown. I may mention two small instances which have come to my notice since war broke out. Oregon pine has been imported into India for many years in large quantities and I have been informed by the Ordnance Department that *chil* timber (Pinus Longifolia) is quite as suitable for many Ordnance purposes as Oregon pine. I have also been informed that *kai* timber (Pinus Excelsa) has been found very suitable for beer barrels.

A survey of the forest resources of India could in my opinion best be organised through the agency of the Forest Research Institute.

The results of such a survey could be made known to the various industries concerned through the agency of the Forest Research Institute by liberal supplies of samples and by the formation of museums in central localities. Recourse will undoubtedly have to be had in the course of time to sales agents if the various trades are to be brought into touch with forest products. I feel that forest Memoirs and Bulletins do not help much in this respect they are too technical and are possibly not sufficiently widely available for those chiefly interested to make use of them.

Supply of raw materials.

The Forest Department being officially designated a *quasi*-commercial department it is difficult to justify the supply on any extensive scale of raw forest products except at market rates in cases other than those of purely pioneer industries. In the case of pioneer industries however as long as the industry remains in the pioneer stage raw forest products may with advantage be supplied at reduced rates. I can however foresee that difficulties will arise in this connection. Industries will be started on the strength of raw produce supplied at nominal rates which cannot hope to develop normally

after the favourable rates are withdrawn. I have before now been approached to grant timber at reduced rates for match-making factories in localities where I am confident the match industry could not pay were market rates for the timber levied.

Official organisation.

In the Punjab the official organisation for the development of industries consists in a Director of Agriculture and Industries. In my opinion the combination of Agriculture and Industries is not a happy one. I consider that the development of agriculture and of industries should proceed separately and I think that the development of agriculture and industries in the Punjab is more than one officer can successfully cope with. Even in the case of the development of industries I do not consider that an organisation consisting of a Director of Industries is ideal. No one official is likely to have the intimate acquaintance with the various industries and different allied departments which is essential if rapid progress is to be made.

For a Director of Industries I would prefer to substitute a Director of Industries acting in conjunction with a Board or Committee of Industries recruited from experts in the various departments concerned. This Board or Committee should I consider be merely advisory and might serve in conjunction with a Director of Industries having executive powers with budgetted funds.

Co-ordination of research.

I consider that as far as the Forest Department is concerned the necessary provision already exists in the shape of the Board of Scientific Advice, and in the triennial programme of work for officers of the Forest Research Institute which is drawn up and approved by the Board of Forestry prior to the commencement of each triennial period.

Trade Journals.

I consider that a journal on the lines of the Timber Trades Journal if published in India would certainly be of use not only to the Forest Department but to all persons connected with the timber trade in India. At the present time one province knows little or nothing of timber prices, stocks in hand, timber requirements and methods of handling and distribution in other provinces.

Waterways.

In the Punjab the great bulk of the timber extracted from Government forests is brought out by water transport. From time immemorial the Punjab rivers had been extensively used for bringing down to the plains timber from the hills. Since the development of the Punjab system of irrigation-canals, complaints have been numerous that the floating power of the Punjab rivers has greatly decreased and at certain seasons of the year some of the rivers are now impracticable for floating timber. On some of the rivers the canals take off a great portion of the water-supply and I think I am right in saying that excepting on the Sirhind and Western Jumna Canals transport of timber on the canals is forbidden on the ground that the canals have not been constructed with this traffic in view. Possibly it may be feasible to remedy this state of affairs by raising and widening bridges, locks, etc., so as to permit of timber traffic in the canals and if this can be done the existing difficulties in extracting timber from the hills will certainly be greatly decreased.

Forest Department.

The most important point to be brought forward is that industrial enterprise is restricted by the fact that the efforts of the Forest Department to supply raw materials are seriously hampered owing to the policy of financing the operations of the Forest Department entirely from revenue. The work of any one year is in practice restricted to what can be undertaken by the expenditure of a portion of the anticipated revenue of the year. The last available returns for the whole of India show that the work of the Forest Department produces a cash surplus which is 47 per cent. of the gross revenue.

Under those circumstances forest operations on a large scale or such as are not likely to be immediately remunerative are naturally impracticable and the promotion of industrial enterprise inevitably suffers. Were this policy abandoned and were important projects involving considerable capital expenditure financed from loans as is done in the case of the Irrigation Department this hindrance to the development of the forest resources of the province would cease.

The commercial side of the Forest Department is at present entirely undeveloped. The forest officer in the majority of cases is expected not only to grow the timber but also to extract it, place it on the market and obtain the best price possible for it. The result has been hitherto that forest officers have naturally devoted most of their attention to growing timber and have not specialised in any way in extraction or in marketing the timber grown. There ought to be a commercial side of the department with central depôts, sales agents and even commercial travellers in touch with the main timber markets.

In the hills little can be done in the way of concentrating special kinds of trees in limited areas as the cost of forming plantations of any appreciable size is prohibitive and the conditions of aspect, drainage, soil, etc., rarely permit of the artificial formation of large

areas of forest of one species. Where conditions are already favourable in the hills there are already existing extensive stretches of natural forests of one species. In the plains of the Punjab the concentration of special kinds of trees in limited areas has been developed to some extent in the new irrigated colonies. In those areas in order to take the place of large forest areas which have been disforested for colonisation certain areas on the lines of railway have been set apart for plantations of shisham and mulberry and these plantations are intended to supply the surrounding districts with fuel and timber. Some 60,000 acres of these plantations are already in course of formation and one plantation of 10,000 acres at Changamanga on the North-Western Railway has supplied Lahore with its timber and fuel for the last 40 years.

In the plains the chief difficulty of the Forest Department's work is the securing of adequate transport to market of the produce of the forests and this difficulty, already serious, will in time become insuperable unless recourse is had to mechanical transport. Out-of-date forms of transport, such as camels, carts and men, must be abandoned at no distant date. The question of replacing camel transport on the Murree-Rawalpindi road by motor lorries is at present under consideration by the Forest Department. In the hills matters are different. The great bulk of the timber is extracted by water. Much of the timber is converted *in situ* into scantlings and carried by men to the nearest side stream down which it is worked to the main river. Occasionally it is possible at this stage to substitute wire rope carriage for transport by men, but as a general rule our knowledge of lumbering is primitive and we require a better knowledge of mechanical devices for the handling and transporting of timber such as are used in Canada and the United States. We require the services of experts in these matters to advise us and a permanent staff of forest engineers to give effect to the expert's recommendations.

General. My suggestions for the development of the timber trade industry in the Punjab are :—

(1) The expenditure of capital for developing the resources of Government forests.

(2) A survey of the resources of these forests.

(3) The development of the lumbering and marketing branches of the department by the employment of a special staff for the extraction and marketing of the produce of the forests.

In my opinion there is a considerable opening for the destructive distillation of wood. There are large areas of forests which at present supply little or no valuable timber but which it is quite possible could be profitably worked were destructive distillation introduced.

There is in the Punjab a very large quantity of inferior *chil* timber (Pinus Longifolia) of which at present very little use is made and I think that an investigation into the possible products to be obtained by the destructive distillation of such wood might lead to favourable results.

ORAL EVIDENCE, 7TH DECEMBER 1917.

Sir F. H. Stewart.—*Q.*—You are Conservator of Forests in the Punjab ?—*A.*—Yes.

Q.—Are you the only one ?—*A.*—Yes.

Q.—With what department of the Local Government do you have relations ?—*A.*—Revenue Department.

Q.—Can you tell us what your staff is ; I don't mean in the forest, but your office staff Have you got anyone in your office who deals with commercial questions ?—*A.*—I do it all myself. I have a Personal Assistant who remains permanently in head-quarters, but everything of importance is sent to me in camp. I am very rarely in headquarters.

Q.—How long in the year do you tour ?—*A.*—I should think 8 to 9 months.

Q.—You tell us about this Government distillery here. Do you manage that ?—*A.*—No, it is managed by the Divisional Forest Officer, an Imperial Forest Officer.

Q.—It makes a very large profit ; does that go into the general Provincial funds, or is it earmarked for forest purposes ?—*A.*—It goes into Provincial revenues.

Q.—Are there similar distilleries elsewhere ? Is there not one in the United Provinces ?—*A.*—That is the only other one.

Q.—That is a Government monopoly too ?—*A.*—Yes.

Q.—Do you come to an arrangement with them about your selling prices ?—*A.*—Yes, for the last two years we have had an arrangement by which the Manager of the United Provinces distillery sells the produce of both distilleries. That arrangement came into force in order to avoid the two distilleries competing.

Q.—Is he a Forest officer or a commercial man?—*A.*—No, he is an engineer. He was State Engineer in Manipur, and is not a member of the Forest Department.

Q.—Do you think you are perhaps getting your prices up too high?—*A.*—I admit that, but the prices are arranged entirely by the Manager of the Bhowali distillery, who is Joint Sales Manager.

Q.—It might react after the war?—*A.*—I admit that also, but if we don't accept those prices, the middleman will take the profit.

Q.—Who are your principal customers?—*A.*—The products mainly go down to Calcutta; a considerable quantity goes to Madras, but the majority to Calcutta.

Q.—You think it is advisable, if not necessary, that it should remain in Government hands, under Government management?—*A.*—Yes, I think it advisable.

Q.—Then you say that you are finding some difficulty now to dispose of the whole of your rosin, and you think that the markets outside India should be tapped?—*A.*—Undoubtedly.

Q.—Do you think that Government should become an exporter?—*A.*—Government will have to pioneer the exporting, find the markets and take up exporting. There is undoubtedly at present no demand in India for the whole of the rosin which we can produce. The turpentine is easily saleable.

Q.—You have certain recognised firms with whom you deal as sale agents?—*A.*—Yes.

Q.—Through the manager at Bhowali?—*A.*—Yes.

Q.—Then you tell us about the attempts that were made to introduce wood pulp manufacture. Those have not been very successful?—*A.*—The one attempt made in the Punjab has fallen through.

Q.—Do you think that wood pulp manufacture here can compete with manufactures from Burma and other parts of India?—*A.*—In the Punjab it is very greatly handicapped by the difficulties in extracting wood from the hills; whereas the grass and bamboos are on the plains, which is a very great start.

Q.—Did the project here ever materialise at all?—*A.*—The concession was given, and the concessionaire failed to make a start. He was given 3 years in which to make a start, and he failed to start the industry.

Q.—Where was he going to manufacture?—*A.*—In the Punjab. He was to put up plant on one of the canals, and he was to use the power from the canal, and he failed to do so.

Q.—He was not going to manufacture on the spot?—*A.*—Oh! no; the wood was to come down from the hills, and from the nearest point on the river he was going to have a light railway to the canal, where he was going to put up his plant.

Q.—Is the project going to be persevered with?—*A.*—At the present moment there is another concessionaire endeavouring to secure a concession; but I have recommended that until the war is over, it is not advisable to give a similar concession. No orders have been passed on that yet.

Q.—With reference to what you say about olive culture, that is an experiment which you think Government should prove, and then get private enterprise to take up?—*A.*—Undoubtedly.

Q.—And similarly with regard to fruit?—*A.*—Undoubtedly.

Q.—Is it Government land on which you are trying these experiments?—*A.*—Yes.

Q.—Your attitude is a little different towards those projects from what it is towards distilling?—*A.*—In the case of distillation of resin, the resin is the property of Government. In the case of fruit culture it would not be the property of Government.

Q.—Then you speak of the difficulty of transport, and about the canals interfering to a certain extent with the transport of timber?—*A.*—Since the Punjab scheme of irrigation canals was introduced, there undoubtedly has been considerable difficulty in extracting timber because at certain seasons the canals take off so much water that the rafts with the timber cannot get down.

Q.—These suggestions which you make about raising and widening bridges, are they practicable?—*A.*—That is beyond me.

Q.—Whom do people come to with these complaints?—*A.*—With regard to rivers, there have been many meetings of the various officers concerned, under Government orders, to secure some means of improving the timber traffic; and several devices have been proposed. I was recently at the Mangla head-works of the Upper Jhelum Canal, where, in order to get over the difficulty of the want of water for bringing down timber, it has been proposed to make a small railway to join up, instead of using the river.

Q.—That would add to the expense?—A.—It would very greatly add to the expense of extraction and reduce the profits on the purchase of the timber.

Q.—What about labour in the Punjab forests; is that a great difficulty?—A.—Labour and transport are the main difficulties.

Q.—How do you manage about labour; is it local?—A.—In the hills we have to import labour from other parts. The sawyers and carriers generally come from places where they live by that entirely. We are rarely able to do work with local labour; we generally import it from certain parts of the Punjab.

Q.—Is that an additional reason why you think that Government should retain forest work in their own hands. It would be still more difficult for private people to engage labour? A.—I don't think so.

Q.—About transport, have you tried rope-ways at all in this province?—A.—Yes, there have been rope-ways in the province for 5 or 6 years.

Q.—You say, "we require a better knowledge of mechanical devices for the handling and transporting of timber, such as are used in Canada and the United States." Have you got a forest engineer now?—A.—No. But we want one.

Q.—Would he be an expert in matters of transport?—A.—We have a man at present in America, trying to secure engineers.

Q.—But the man you are proposing to import, he would really be an expert from the United States of America, or Canada?—A.—Yes.

Q.—Would the problems here be much the same? They would not, would they?—A.—I should think they would be very much the same.

Q.—Your main difficulty here is that at certain seasons of the year there is no water?—A.—That is in the lower reaches after the rivers leave the hills. It is in the upper reaches that great expense is incurred in extracting timber, in getting it into the main rivers.

Q.—You require an engineer and are likely to get one or two shortly?—A.—Yes.

Q.—Then about the commercial side of forest questions. Do you want a forest officer trained, to a certain extent, in business, and then put in charge of the commercial side of the business; or do you want to recruit businessmen?—A.—I think to put a forest officer on is to waste a trained man, and to entrust him with work about which he knows little or nothing. We require a businessman.

Q.—Would you be likely to get a good enough man for anything you could afford to pay him: would his prospects be sufficiently good to attract a good man?—A.—For this province alone?

Q.—Or do you think he should be an Imperial Officer?—A.—I think the time will come when we will have to send most of our timber to central depôts for distribution.

Q.—Is your idea perhaps that of the extension of the duties of the Forest Economist: he deals with commercial questions to a certain extent?—A.—Only in an advisory sense. He is purely advisory. I don't think that he has any more actual commercial knowledge than other forest officers have.

Q.—A man like this would not be eligible for the higher appointments in the forest service, would he?—A.—No.

Q.—So that there would be some difficulty in getting a man who would go into a *cul de sac* so to speak?—A.—He might be very much on the same scale as the forest engineers whom we propose to employ.

Q.—Do you propose that those should be regular members of the forest service?—A.—The proposal is that they should be on the same terms as the forest officers, except that they should not go up to the administrative grades. They correspond to the Divisional Forest Officers.

Q.—Would that be better than putting them under the Director of Industries and borrowing them, having them attached to the Forest Department for special work or for certain periods?—A.—Yes, if you attached him for a certain period only, what is to become of the work after he had left: the knowledge he had gained would be lost.

Q.—You recommend a Director of Industries with an Advisory Board recruited from experts in the various departments concerned: would you contemplate being a Member of that Board yourself, for instance?—A.—If the timber industry was sufficiently important in the Punjab to justify that, I should say so certainly.

Q.—In the next sentence you say, "I consider that as far as the Forest Department is concerned, the necessary provision already exists in the shape of the Board of Scientific Advice." Is that with reference to the same?—*A.*—No, that is purely the scientific side of the department, with which the Board of Scientific Advice deals. I was considering more the commercial side when I noted about the Director of Industries.

Q.—However, you think that the Forest Department should have the services of an engineer and a commercial man, who should be definite members of that department?—*A.*—Yes.

Q.—With reference to the distillation of wood, have any experiments been made with the inferior timbers in this province?—*A.*—In this province lately we made a kiln which was not a success in practice. We have done nothing with destructive distillation. In the whole of Kangra the timber is not sufficiently good for timber purposes, but there is a very large quantity which might be of value if destructive distillation was used.

Q.—You would like to carry on these experiments a good deal further?—*A.*—Yes, there is something in it.

Q.—And you could do it yourself?—*A.*—No.

Q.—Who would be the best people to do it?—*A.*—That might well be done at the Research Institute.

Sir D. J. Tata—*Q.*—How far are you able to meet the demand for turpentine and rosin in India from your distillery?—*A.*—The demand for rosin we meet fully.

Q.—Have you any idea of the import figures of turpentine and rosin before the war; the quantity imported?—*A.*—I cannot give you them at the moment. I can get them for you.

Q.—Will this distillery be able to meet the total demands of India, or is it only beginning to make a way in that direction?—*A.*—I think it is entirely meeting it in the case of rosin. We are at present manufacturing more than we can sell with ease.

Q.—Selling in this part of the country; but would it meet the demand of the whole of India?—*A.*—Yes, we are at present sending it down as far as Madras.

Q.—And turpentine you are making to meet the entire demand?—*A.*—I believe I could sell a little more turpentine, but we have really not expanded sufficiently yet. We have only been working with this new plant in the Punjab for barely 3 years, and could more than treble our outturn if it was required.

Q.—With reference to this case of a concessionaire in regard to wood pulp which you mention, did he have any experience of wood pulp manufacture, paper making from wood pulp? Why was he selected? *A.*—He applied for it. He certainly had no experience at all, but he was assisted in his endeavour to secure a concession by Mr. Raitt who is a cellulose expert in India. He assisted him and took part in the negotiations.

Q.—There is no Government expert to advise on the details of the manufacture of pulp suitably?—*A.*—Not that I know of.

Q.—This man failed, simply because he had not sufficient expert knowledge?—*A.* Pardon me, I think he failed because he could not raise the money.

Q.—With regard to fruit culture, are there any expert fruit-growers in India, like those you have in Australia, to advise the department?—*A.*—We have some settlers in the Kulu valley who have been at fruit culture for many years now.

Q.—Is not fruit-growing a special branch, and there are special people who know all about fruit-growing, who might be brought in to advise?—*A.*—I believe there are.

Q.—What are the principal varieties of fruit you try to grow here?—*A.*—Apples and pears.

Q.—Is there any orange cultivation?—*A.*—I should think in the plains there is considerable scope for it.

Q.—You say "considerable benefit would be derived by a further survey of the Indian forests." Is that not carried on systematically at all? There is a great need to show how the various timbers could be utilized?—*A.*—Quite so.

Q.—What is being done in that direction?—*A.*—I believe up to now the Research Institute has only been able to nibble at it.

Q.—Is that because they are not sufficiently staffed?—*A.*—It takes time. The Research Institute has not been in existence for many years. They have been finding their feet. I should not like to say that they require at the present moment to enlarge the institute.

Q.—Great expenditure is necessary, and Government is to provide that?—*A.*—I should say so.

Q.—You said something about the improved methods of handling and extracting timber ; but that we have not got here the necessary skilled officers. We have to import them from Canada or America or Australia ?—*A.*—The Indian forest officer has no experience of lumbering.

Q.—I think we heard at Dehra Dun that an Australian forest officer came down and said that the methods employed were so poor that lakhs of rupees were being wasted? *A.* I met the gentleman in question.

Q.—What was his idea about the forests here ?—Did he think they were properly handled ?—*A.*—The only one which he told me he had visited in the Punjab was our irrigated plantation at Changamanga, and his opinion of that was very good.

Q.—But the difficulty is in extracting and handling, and for that we have no skilled labour ?—*A.*—We have not the knowledge or experience.

Q.—That has got to be imported ?—*A.*—Undoubtedly.

Q.—You said there were some ropeways. Where are they situated ? Are they to bring the timber down from the forest into the main river ?—*A.*—At present the timber is converted into scantlings where it is felled, and carried down to the river or nearest subsidiary nallah, by which it can be floated. To save carriage it is possible in places to put up ropeways.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Is your distillery bigger than that of the United Provinces ?—*A.*—Not at present. We convert up to a maximum of 30,000 maunds a year ; they convert nearly 70,000. Our agreement with them at present is that we shall not exceed 30,000 and they not more than 70,000 maunds of crude resin a year.

Q.—Supposing you had no agreement with them, you would have competed with them in selling the product ?—*A.*—Yes, in the same way that we compete in other branches of our work—bamboos, timber, everything.

Q.—Then you would be competing with private enterprise ; that would mean Government carrying on a trade and competing with private enterprise ?—*A.*—Not private enterprise, as there is none in resin at present. There is no other distillery except Government's.

Q.—But there is one in the United Provinces ?—*A.*—That is also Government's.

Q.—Do you think after the war you will be able to show such good results ?—*A.*—Not unless we expand.

Q.—Do you think Government is a proper agency to deal with this export of resin products ; more so than private people ?—*A.*—Government would not send men abroad. It would ship the produce to local agents there. Having found markets, the local agents would be perfectly able to sell the produce. We have already sent some to Java.

Q.—Do you wish that Government should trade in the produce ?—*A.*—I should like Government certainly to manufacture it. You require a standard article both in turpentine and rosin.

Q.—And a private party would not be able to produce this ?—*A.*—I am not prepared to say that.

Q.—Don't you think that in war time, when Government is making such handsome profits, if they wanted to sell this pioneer factory they could get better prices ? And with private enterprise it could be developed further, don't you think the enterprise would be better off ?—*A.*—I doubt whether if we disposed of the resin factory we would secure better results.

Q.—You think Government could carry on these factories better ?—*A.*—Yes.

Q.—Then you want a Board of Industries having all officials as members ?—*A.*—No.

Q.—You say "all experts "?—*A.*—Yes.

Q.—All Government experts ?—*A.*—Not necessarily.

Q.—Have you got any cement factory in your province ?—*A.*—No.

Sir P. H. Stewart.—*Q.*—About your accounts in the distillery, do you charge your raw materials at full value ?—*A.*—I am afraid I don't understand.

Q.—How do you arrive at your profits ?—*A.*—There is no cost of raw material charged

Q.—You take that as free ?—*A.*—At least we charge no royalty. We charge all expenditure on producing, and we charge depreciation on plant, and interest on expenditure.

Q.—And cost of transport ?—*A.*—Yes. The only thing we don't debit the distillery with is Government royalty on crude resin.

Mr. C. E. Low.— *Q.*—What classes of contracts have you got of what you might call a commercial nature with fairly large firms ?—*A.*—We have at the present moment three five-year leases of our forests to important firms.

Q.—Are those local firms ?—*A.*—Yes, they belong to the Punjab.

Q.—Do these firms extract everything ; or do you do any departmental extraction ?—*A.*—They don't extract everything ; they only extract the trees we agree to sell them for the 5 years.

Q.—You don't have any cases where you remove timber in any form, either logs or scantlings, and then sell them at some depôt on a large scale ?—*A.*—Up to 8 years ago we did that on a large scale, and this year we have just commenced to do so in the Bashahr State. We are going to work those forests entirely departmentally in future.

Q.—Was there any import of timber into the Punjab from other provinces, or from outside India before the War ?—*A.*—Yes, a very great deal comes down the Indus.

Q.—From Kashmir you mean ?—*A.*— No, from up Kabul way.

Q.—I was thinking more of stuff coming in from the United Provinces, or coming overseas, and not from Kashmir ?—*A.*—A considerable amount comes from the United Provinces and is sold in the Punjab ; a considerable amount of *chir* timber and nearly all the bamboos used in the Punjab, come from the United Provinces. Much of the military requirements have been met from Oregon pine, which is all imported to Karachi and Bombay.

Q.—What sources of information, or what assistance have you at your disposal, when you enter into one of these 5-year contracts with a firm for the removal of timber from your forest, or for the purchase of timber extracted by you departmentally ?—*A.*—For fixing the rate ? We only have our knowledge of the cost of bringing out the wood, and also our knowledge of present market rates.

Q.—You know your crop and you know more or less what it costs to get it out ?—*A.*—And the market rate at which it is at present selling, the market rate in the Punjab.

Q.—How far is that market rate, so to speak, correct : how far is it a genuine rate, or one which is due to the operations of a ring, or to unavoidable circumstances : how far is it a true rate ?—*A.*—There is no ring in the Punjab among the big timber merchants, among the men who take leases. They compete by private tenders for those leases, and there is no ring amongst them.

Q.—How do you obtain information as to whether your products can be advantageously sent outside the Punjab for use elsewhere ? Supposing you had an idea that it might be possible to work up advantageously the trade in Punjab timber, say, in Karachi or Ahmedabad, how would you obtain information on that point ?—*A.*—We could only apply to the Forest Economist for that.

Q.—And the Forest Economist would not know it by the light of nature : how could he find out ; has he got a system of commercial intelligence ?—*A.*—He is an officer who is consulted by anybody who wants a supply of timber. He very frequently gets enquiries as to where stocks are available, and in that way would know where there is a demand.

Q.—That is all right as far as you have a man to refer to ; but you also want somebody initiating enquiries of that sort ?—*A.*—We have nobody in the Punjab to do that.

Q.—One who has sufficient information at his command to show him where such enquiries can advantageously be made ?—*A.*—No, we have nobody really in touch with the timber market at all.

Q.—With that also would go the question of the differentiation of slightly different qualities of timber, applying them to certain particular uses, with probable increases in price. You might say you have got a class of timber here which you think would meet a demand in such and such a place. At present they are paying a much higher price for that particular class than you are getting for it here. You have no means of getting that sort of information ?—*A.*—No, none.

Q.—In what way would you suggest that the functions of the Forest Economist should be extended ; or how do you suggest that that kind of information should be obtained, and that sort of enquiry facilitated ?—*A.*—I should like to employ officers for sales to dispose of our timbers. It is not the Forest officer's legitimate duty to sell his timber. He is trained to grow it, not to sell it ; and certainly to sell it to its best advantage takes a considerable knowledge of the market.

Q.—In what sized lots to put it up ? And where to send it to ?—*A.*—We have not got that.

Q.—Do you think a man like that should be initially a commercial man with considerable experience, or a forest man with commercial training, deputed to work in a commercial office ?—*A.*—Certainly a commercial man trained in one of those big timber firms.

Q.—And those men, in addition to being under the local Conservator, would have direct relations with the Forest Economist?—*A.*—Yes.

Q.—On matters of mere information?—*A.*—He could consult him.

Q.—Should there be free interchange of information?—*A.*—Yes, the Forest Economist would have nothing to do with sales.

Q.—Would he not be a clearing house between men in different provinces?—*A.*—No.

Q.—Is there anyone else except Government producing resin, or is there likely to be anyone else?—*A.*—Nobody does at present, but there is a very large area belonging to Native States, which undoubtedly will develop their resin industry. We are already training men for resin tapping in the Patiala State.

Q.—What would happen; would they compete with you?—*A.*—Yes. Kashmir is certain to compete with us.

Q.—You said you have had about 5 years' experience of rope-ways here. What length of rope-ways have you worked; what is the longest?—*A.*—As far as I know, three to four thousand yards is the longest.

Q.—You have limited your spans to 1,000 feet?—*A.*—That depends upon the thickness of rope and your ability to carry it into the hills. The carriage is exceedingly costly and elaborate.

Q.—*Sir D. J. Tata.*—Are they wire ropes?—*A.*—Yes.

Q.—*Mr. C. E. Low.*—Of course the saving in cost of extraction is very very great?—*A.*—Yes, not only that, but it enables you to extract the wood. You could not get it out otherwise, it expedites extraction.

Q.—Have you any information as to how people in places like British Columbia manage to move their wire ropes and set them up, and what lengths of span they use?—*A.*—No, I have no information. I think that extraction in the Himalayas is more difficult than in most countries.

Q.—At present, in ordinary peace time you are not fully meeting local demands; you say Oregon pine is imported?—*A.*—Very largely.

Q.—Are you meeting the local demand?—*A.*—No.

Q.—Do you consider that timber here in the Punjab was, before the war, at an undesirably high figure, with reference to the ordinary development of trade and industry?—*A.*—Timber in the Punjab hitherto has been expensive undoubtedly, mainly due to the difficulty and cost of extraction.

Q.—Do you think if a system of development could be worked, which would enable you to increase your output a good deal, this could be done without injury to the forest, and with advantage to the public, and with a reduction in price?—*A.*—I think the price could be reduced considerably. We probably could not extract timber at prices at which it is extracted in Norway and Sweden.

Q.—You say you contemplate sending your timber to be sold at central depôts. What is the reason of that?—*A.*—We have more fir timber in the Punjab than I am sure we shall ever be able to sell locally. We cannot have separate agencies in the big towns, so obviously the solution is a central depôt for that purpose.

Q.—Can you give me an idea of how many central depôts you mean, and in what sort of places?—*A.*—Wherever you have a big distributing market for timber, I should have a central depôt. It is no use having separate depôts in the same town for different provinces. I should have one central depôt and pool the profits of it and have it run by one commercial man. I should have one in the Punjab; I should certainly have one in Calcutta, Delhi and so on.

Q.—Have you been supplying much timber, or scantlings or sleepers for overseas munitions work?—*A.*—A very large quantity has gone out from the Punjab, chiefly from timber traders. Government has done a considerable amount. We sent off ourselves 2,000 tons of scantlings to Mesopotamia.

Q.—Has that added at all to your experience of the possibilities of the timber trade in India?—*A.*—To my mind it has simply demonstrated our inefficiency in the way of extraction. We could have done very much more, if we had been prepared in the way of transport. Hitherto we have not attempted to use mechanical transport for bringing it out. We still use camels or men or carts.

Q.—In the plains you mean ?—*A.*—Yes, coming down from the Murree Hills. The same in Kangra. We have very fine cart roads, and we still go on using men, camels and carts ; whereas motor transport can be utilised.

Q.—There are certain matters in which you want things improved, in which you confessedly cannot see your way : for instance, in the use of rope-ways you require further information and further enquiry, before you can say how such things can be extended to advantage ; but there are certain matters on which you could, if you had the money, spend it to-morrow with advantage ?—*A.*—Certainly, where transport is easy it is purely a question of spending money to improve the transport.

Q.—Like forest officers all over India, I suppose you find some difficulty in getting your demands for expenditure improvements accepted ? *A.*—Yes, we are supposed to work with a portion of our surplus from year to year.

Q.—It was suggested to us in Madras and other places that the improvement of forest communications should be taken up ; that there should be a fund which should be credited with certain balances, and the expenditure should go on regularly from year to year with the expenditure being debited against that forest fund, improvement fund. What would be your idea of that, to put it on a capital basis instead of a revenue one ?—*A.*—I should like a portion of the forest surplus to be set aside to form a fund for capital expenditure. The forest surplus goes into provincial revenues.

Q.—How long is it since there has been a surplus in this province ?—*A.* I don't know of any year in which there has been a deficit. At present we produce a surplus of rupees 8 lakhs.

Q.—People have been coming forward and either asking for, or obtaining, concessions for paper pulp ; but nobody has ever taken any practical steps whatever towards erecting plant or making the pulp. Do you think that is due to mere accident ; that is to say, that all these proposals matured about the time that war broke out, and they were unable to get their machinery : or do you think it was due to people not getting capital ; or to lack of information as to how things would work out on a big commercial scale ?—*A.*—My own opinion is that they are rather doubtful of the wood pulp manufacture. I noticed a concessionaire who endeavoured to side-track into converting a very large proportion of his wood into scantlings : whether it was for sleepers or tea boxes I don't know. He wanted an option with permission not to convert into paper pulp but into scantlings.

Sir Francis Stewart.—*Q.*—But he got that option in his concessions ?—*A.*—He did if I approved. He insisted on having it, and the gentleman who has now applied for this concession has made a similar request on an extended scale, and wants a concession to put up plant that will turn out a million tea-boxes a year at a nominal royalty rate.

Q.—Has there been any attempt here to make matches ?—*A.*—There have been many enquiries, but they have never come to anything. The enquiries have chiefly been with regard to erecting match factories in the hills. It is not judicious to put a match factory in the hills, because you have to carry your chemicals up and the transport is expensive and difficult, and I can imagine no more unsuitable place than in the Punjab hills for a match factory. I had one application to make matches from poplar in the plains, but that never materialised, because there is not a sufficient supply to keep a match factory going.

Q.—Not even in Kashmir ?—*A.*—Kashmir is outside my beat.

Q.—What species was that ?—*A.*—The " Populus euphratica."

Q.—We were told that they grew in Sindh ?—*A.*—There is a considerable quantity in the south-western Punjab, but not nearly sufficient to keep a match factory going. An applicant came up and saw it, and decided that it was not nearly enough for him to go on with.

Q.—Is anything known about the suitability of any of the pines ?—*A.*—That has all been worked out. They have all been tried. Some of them are quite good. The best tree is the Simal. It is not common in the Punjab.

Q.—We heard of that from the Bareilly match factory ; they did not like it at all ?—*A.*—Every one of the conifers has some disadvantage for making matches. Some don't light properly, and others still glow after they have gone out, or snap off.

Q.—Has anything ever been done to try to get villagers to work on a co-operative basis, with reference to grafting and packing, and so on, in the Kulu fruit trade ?—*A.*—In Kulu they have never got so far as that. We graft trees and distribute trees free ; put grafts on to their village trees. They have accepted them, but shown no interest in looking after them subsequently.

Q.—Is that because your department is not suitable always for that kind of work : for instance, the Agricultural Department might perhaps have greater success. Your department is primarily concerned in telling villagers not to do certain things, and it is perhaps less easy for you to assume a beneficent aspect ?—*A.*—I think the reason for want of success so far is not being able to demonstrate to them the profit there is in the industry. Our orchards are just beginning to come into fruit.

Q.—How long has the Salvation Army been working at this mulberry proposition in Changamanga?—*A.*—Off and on about eight years; ever since I came into the Punjab.

Q.—Do you know what they do in the way of sale of seed?—*A.*—No.

Sir F. H. Stewart.—About this option which this concessionaire wanted; are you in favour of granting such an option?—*A.*—You mean for the wood pulp?

Q.—For the manufacture of sleepers as well as wood pulp and tea boxes, etc. Is there not the danger that the manufacture of tea boxes or sleepers would be so much more profitable that he would neglect wood pulp altogether?—*A.*—That was the intention in this case, to branch off into the timber trade and leave the wood pulp merely as a subsidiary matter entirely. That, in my opinion, was his intention.

Q.—Then you would not be very favourably disposed to give him the option?—*A.*—No.

Hon'ble Mr. H. J. Maynard.—Q.—I have got before me the resolution of the 9th October 1894 which lays down the policy of Government in respect to the Forest Department. It does not specifically refer to any industry except the large timber industry. Supposing you follow the principles laid down in this resolution, does it give you sufficient scope for considering the needs of industries as apart from the large timber industry. I take it to be the latest statement of policy. Do the principles that are laid down, whether in this or in other places, give you sufficient scope for considering the requirements of industries apart from the large timber industry?—*A.*—I should say they do not. I should say that resolution was issued without sufficient consideration for industrial expansion. I should say so if I may criticise it.

Witness No. 361.

Mr. E. A. Scott, *Signal Engineer, North-Western Railway, Lahore.*

Written evidence.

I.—Financial aid to Industrial Enterprises.

Capital.

Q. 1.—I personally have had no experience of raising of capital, but one of the difficulties which undoubtedly do exist in the Punjab is the want of confidence on the part of the minor capitalist in trusting his money to companies or firms. This lack of confidence is created by the periodical failure of banks and other industrial concerns. This defect might in time be remedied by stiffening up the rules under which such enterprises are allowed to be started and providing that the accounts of such firms be audited periodically, according to the nature of the enterprise concerned, by Government experts until such time as it is assured that they will be successful. This will ensure against new industries becoming wholly bankrupt and at least guard against total loss of capital.

Q. 4.—The personal knowledge or experience I have of financial aid by Government to industrial enterprises is confined to Guaranteed Railways. This has in most cases proved advantageous both to Government and to companies concerned. The only suggestion I have to make is that the terms of the agreement be more carefully drawn up, as at present they are sometimes ambiguous and difficult to interpret?

Government assistance.

Q. 5. This should be limited to—

(*i*) guaranteed dividends for limited periods on similar terms now given to Railways:

(*ii*) provision of part share of the capital on the same basis as publicsub scriptions:

(*iii*) guarantee or preferential Government purchase of products, which are actually required for Government use, for limited periods:

(*iv*) rebate on Railway freights only in those cases where this concession would help the industry against foreign competition.

Regarding the above—

(*i*) it has proved satisfactory in the case of Railways; there is no reason why should not prove equally satisfactory with other industries:

(*ii*) the fact that Government owned part of the capital on the same terms themselves would encourage small investors:

(*iii*) this could be done with little or no cost to Government:

(*iv*) could easily be arranged as the major portion of the Indian Railways are actual property of Government and it is recognised as an admittedly advantageous way of helping young industries.

In all the above cases Government should claim a certain amount of control in proportion to the concession granted.

Q. 7.—If it is considered that a new industry could be profitably started and the only difficulty is the raising of the capital from public or private subscription, Government should provide the capital. The advantages accruing to a country by the establishment of a successful enterprise are in no way affected by the ownership. Pioneer industries.

The above applies more especially in the case of key industries which it would be advantageous for Government to own.

II.—Technical aid to Industries.

Q. 25.—An effort should certainly be made by Government to increase the existing knowledge of the resources of India. It is extremely improbable that we are acquainted with all the mineral, oil, coal and other deposits which exist. An experimental department should be formed for investigating the question. The cost to Government even if the department were liberally financed, which it certainly should be, would be small compared with the possible advantages which might accrue. Surveys for industrial purposes.

This is an investigation which Government should certainly undertake and not leave to private enterprise.

III.—Assistance in marketing Products.

Q. 38.—The present rules, which lay down that Government Departments should order their European requirements through the India Office, should be abolished and each department should be allowed to arrange for its own supplies. Government patronage.

The staff of the Stores Department of the India Office are not as a rule familiar with Indian conditions and are generally composed of officials who have not been to India. In the majority of cases where engineering stores are in question, they are little more than a Post Office between the indenting officer and the consulting engineers.

Railways managed by companies have no such elaborate system for obtaining their stores and I think they are better served than State Railways.

Furthermore by bringing the Heads of Departments in direct contact with the suppliers, it would encourage greater intercourse between the two concerned which would be of great advantage.

Finally there would be fewer misunderstandings, less correspondence and, I am sure, greater economy.

IV.—Other forms of Government aid to Industries.

Q. 43 (*a*).—Government could assist and considerably encourage industries by the establishment of hydro-electric or wholly electric power centres—See further remarks under section IX. Land policy.

V.—Training of Labour and Supervision.

Q. 44 (*a*).—The lack of primary education does hinder industrial development, in that without primary education no further education can follow. General.

Q. 44 (*b*).—No special efforts, except in the training of apprentices, have been made, as far as I know, to improve the labourer's skill on Indian Railways.

Q. 45 (*a*).—Generally I consider that in addition to the schools now existing, elementary, intermediate and advanced technical schools should be established.

Q. 45 (*b*).—In special industries if they are large enough, special technical schools on the lines indicated above should be established.

Q. 46.—I have trained numerous apprentices in the Signal and Interlocking Department of the Railway. Youths accepted as apprentices are obliged to have attained a certain educational standard. They are then put through a four years' course, starting as ordinary workmen and gradually passed through the various branches of the department ; they are examined periodically, if their progress is satisfactory they are retained, otherwise their services are dispensed with. The arrangement has worked satisfactorily and there are now in the service some highly competent inspectors so trained. Apprenticeship system and Industrial and other schools.

Q. 47.—Nearly all the draftsmen in my office, who are employed on both civil engineering and mechanical drawings, have been trained in the Railway Technical School, Lahore ; they have been well trained and some of them are very capable.

NOTE.—This school is in no way connected with the North-Western Railway.

Q. 48.—Assuming that industrial schools were established on the lines indicated below (see reply to Q. 50) probably the best way of co-ordinating them with the apprenticeship system would be for youths to attend the industrial school for which they are suited for half the day and work in the shop to which they are apprenticed for the other half.

Q. 50.—Industrial and commercial schools should be entirely separated from other schools where general education is given and not be under the Indian Educational Service, but be officered by technical and business experts. The reason for this is that the ordinary general educational professor is generally unfit to undertake technical and commercial education. The existing educational system should remain as it is, with its different qualifying gradations of primary, middle and high. The industrial schools would be similarly graded. A youth would not be admitted to the primary, middle or high industrial and commercial schools unless he held a primary, middle or high school certificate from the ordinary Educational Department.

The primary industrial school, to which no youth would be admitted unless he held a primary school certificate from the Educational Service, would confine itself to training skilled workmen in their trades.

The secondary or middle industrial school would only accept youths who held the middle school certificate and would train its students as chargemen, foremen and the upper subordinate class of workmen.

Finally the industrial high school, which would only accept men who had qualified in the high educational test, would train its students as managers and heads of business generally. The above is the principle and method of industrial education adopted in Germany and it is probably one of the fundamental causes of her recent industrial progress.

Training of supervising and technical staff.

Q. 51.—This would be done by the industrial and commercial high schools indicated above.

Q. 52.—I do not think any fixed rules should be made for assisting supervisors, managers and technical staff of private firms to study methods and conditions in other countries, as these rules would probably be in many cases abused, but Government should reserve to itself the privilege of helping in special cases.

Mechanical Engineers.

Q. 54.—Tests and examinations for these should be uniform. If a separate department for Industrial Education were established this would naturally follow.

VII.—Organisation of Technical and Scientific Departments of Government.

Study of foreign methods.

Q. 77.—More encouragement should be given to Government technical and scientific experts to study conditions and methods in other countries than is now given. At present, in the Engineering Department, the rules which provide for this, are drawn up chiefly in favour of junior officers. Without depriving junior officers of this advantage, I would suggest that it would be more advantageous to Government to encourage senior officers who are, or are about to become, heads of departments. The reasons for this are :—

(*i*) That a senior officer can, on return to India, undoubtedly use the knowledge gained, and put it in practice, while the junior officer probably may not ;

(*ii*) The senior officer's judgment and view of proportion is more matured.

Furthermore special officers should be repeatedly given these opportunities of studying foreign methods as the art of assimilating this knowledge is greatly improved by practice.

IX.—Other forms of Government action and Organisation.

Roads, Railways and Waterways.

Q. 97.—It is difficult to say in detail to what extent the lack of transport facilities hinder industrial progress in the Punjab, but I think there can be little doubt that such is the case.

In the Punjab, which is eminently naturally suited to water transport, comparatively little exists and that is certainly not encouraged.

This matter should be specially investigated.

River and canal transport should be increased to a maximum. The Punjab offers special facilities for water transport, which would be cheaper and in some cases quicker than rail. The majority of experts and investigators of industrial development consider transportation facilities as the very foundation of industrial prosperity.

The following table taken from "The causes and extent of industrial progress of Germany" by E. D. Howard, illustrates the truth of the importance of transportation facilities :—

Comparative statement of length of Railways.

	1870. *Miles.*	1887. *Miles.*	1903. *Miles.*
Great Britain	15,000	19,000	22,000
Germany	11,000	24,000	32,000
America (United States) ..	53,000	1,56,000	1,98,000

By comparing this table with the history of the industrial development in Germany and America it will be seen that the extension of railways preceded, and did not follow, the rapid development of industries in the last two countries named. I would therefore suggest—

(*i*) that money be found for the railway already projected in the Punjab :

(*ii*) that special officers be deputed by Government to report on what other railways are considered necessary, and that the matter be not left to enterprising company promoters :

(*iii*) that a special committee be appointed to report on the feasibility of waterways for facilitating transportation.

On general principles, to encourage industries, railways should be State-managed in order to abolish abuses which appear when the management is private, *e.g.*, rebates to favoured shippers, lack of facilities for cheap through traffic, expensive service and other points where the interest of the Railway Companies diverges from that of the public.

Whether the working of all railways by the State would be an advantage to the railways and the State is another matter.

Q. 98.—I consider that the classification of goods is too complicated, being copied from the English system, where conditions are different, and which have been considerably criticised by some experts.

A committee, consisting of an equal number of railway experts and businessmen, should be appointed to report on this matter, as I think it probably does hamper, if not prevent, industrial develpoment.

Hydro-Electric Power Surveys.

Q. 102.—Certain investigations have I believe been made by the Canal Department to ascertain the development of hydro-electric power, but these were probably made more with a view of extending irrigation than of developing power. Further investigations should certainly be made. The long considered irrigation scheme, with headworks at Sukkur in Sind, offers to my mind an excellent opportunity of combining irrigation with a hydro-electric development.

The introduction of electric installations for lighting, traction and motive power will create a demand for machinery and indirectly for other products which will quicken industry. This can be verified by examining the increase of industries resultant on the introduction of electric power in England, Germany and America. Too much emphasis cannot be laid on the fact that the creation of electric power automatically develops industries.

X.—General.

Q. 111.—Now that Tata's Iron and Steel manufactory has been established in India, many iron work industries could probably be profitably started. To get an idea of what these industries are, a review should be made, in this special case of the iron manufactured articles which are imported and generally of all imports. This would be some basis on which to consider what industries may be established.

ORAL EVIDENCE, 7TH DECEMBER 1917.

Mr. C. E. Low.—*Q.*—You say : "The present rules which lay down that Government Departments should order their European requirements through the India Office should be abolished and each department should be allowed to arrange for its own supplies." The railway is probably in a good position to know whom to buy from and also to test the quality of the supplies when they are received, but many civil departments of Government which require supplies are not in that position ?—*A.*—Please give an instance.

Q.—Take the Agricultural or the Forest Department. Supposing they are buying engines or structural material or anything of that sort, how are they to get their supplies ?—*A.*—I think they will get them through the Public Works Department if they are building any structures.

Q.—They are all right about things they know about, but their scope of experience is rather limited. If you suddenly turn to a Public Works Department man and ask him to purchase a rope-way or road transport train for the Forest Department he may not be very helpful. Would that not be an exceptional case? If you want to do away with this very inconvenient system of purchasing through the India Office, is there not any other way of doing it than letting all the departments loose competing against each other and running up prices?—*A.*—I do not mean that each little department would be ordering its own things itself.

Q.—How would you look upon the idea of a Stores Department in this country under the Government of India with branches in the different provinces which would deal with indents somewhat in the same way as the Munitions Board and the local priority committees do at present?—*A.*—It might be better than at home.

Q.—In order to try and get as many things as possible made in this country?—*A.*—I think that will be better.

Q.—Is it not your experience that many more things are actually being made in this country than we have been ordering here?—*A.*—I do not say that.

Q.—If you look through any of these big indents that go home, you will find that a lot of things are really being made in this country or they are things which can very easily be made with some slight adjustment?—*A.*—Undoubtedly.

Q.—Would it not be better for everybody if we made as many things as we could and raised the general level of industrial efficiency?—*A.*—I suppose it would. It depends on what way you look at it.

Q.—Is a company line better off than a Government line in this respect?—*A.*—Some of them have their own consulting engineers at home. They are in much closer touch with their suppliers than we. I have stated in my note that the head of the Stores Department is a retired English civilian.

Q.—Do you find that there is any difficulty in getting the manufacturers at home to follow Indian conditions and modify and improve their products in order to suit Indian conditions where necessary?—*A.*—No. We have not noticed that on railways.

Q.—Going round the shops of the Great Indian Peninsula Railway we had a very strong complaint from the people there that home manufacturers would not recognise the peculiarities of the Indian climate, and it was suggested to us there that if we had a branch of one of the electrical firms here actually working in this country they would know about the local requirements and improve their products with reference to Indian conditions?—*A.*—I have *not* noticed that particularly.

Q.—What do you think of the idea of allowing people to give orders to branches of firms in this country who would keep a certain amount of stocks and keep a man who would set up the plant and if possible manufacture it to some extent in this country?—*A.*—I think it ought to be done.

Q.—Turning to the question of training of labour and supervision you say that there should be primary, secondary and high schools for industrial purposes, and you say: "Finally the industrial high school which would only accept men who had qualified in the high educational test would train its students as managers and heads of business generally." Would you allow a man to go into that kind of educational institution unless he had shown that he could stand practical work by putting in some time in the shops?—*A.*—I think so.

Q.—The complaint we have heard is that the men who have come out from these institutes, which are more or less of the college type, do not like shop hours. They can run a machine all right but cannot put a thing right if it goes wrong?—*A.*—The man can have shop experience in the high technical school.

Q.—The other objection against them is that they do not like factory hours?—*A.*—We would not keep such men.

Q.—In Bombay they have the Victoria Technical Institute and we were told that the men who were put through that had such shop training as they could give from 10 o'clock to 4 in the afternoon and those men were engine-drivers and not mechanics. That was one objection to them. In mills it was said that they did not like mill hours and would not work from 6 in the morning for 12 hours. The railway people also said that they did not see much prospects either and they thought it was wrong to put a man through that technical training unless it had been ascertained first of all that the man was ready to go through the mill and keep shop hours. What is your opinion of that position? Do you agree with the necessity of securing the man who is first of all suited by inclination to practical mechanical engineering work before giving him training of the college type?—*A.*—It is very difficult.

Q.—He does not know. He attends at a college from 10 to 4 and he is quite happy about it, but when it comes to his going over to your shops and wanting a job in your shops he does not like the hours?—*A.*—We would give the man a chance and if he is bad he would not

be kept. I am training these boys. They are all educated to some extent. Some of them work and some do not. It depends entirely on the boys.

Q.—Have you produced any Indians of what you call the foremen or chargemen type ?—*A.*—We have.

Q.—On what pay ?—*A.*—They rise to Rs. 400 or 450.

Q.—How are these produced ?—*A.*—The man joins my shop as an apprentice. He has to pass the middle school examination. The men come from anywhere they like.

Q.—Are these as a matter of fact largely the sons of your employees ?—*A.*—The majority are. We take anybody. When first of all a man comes to our shops we give him a trial for three months, and if we find that he is keen and takes an interest in the work, keeping shop hours, we give him a nominal salary of 5 or 8 annas a day and if he turns out good we keep him as an apprentice and during his apprenticeship we examine him periodically and eventually he gets post in the shops.

Q.—What pay do you give him while he is an apprentice ?—*A.*—I do not quite remember. Something like Rs. 30, 40 or 60.

Q.—Do you provide any hostel accommodation or anything ?—*A.*—Not myself. The Locomotive people do it for the European boys.

Q.—Do you contemplate any for Indians ?—*A.*—I do not think so. I do not think they appreciate it. They are just as happy without.

Q.—What actual education do they get over and above the experience they get in the shops ? Do you have off days or night schools ?—*A.*—We do not have any night schools. For the men who are trained as signal inspectors or foremen in charge their education is just up to the middle school. They know how to write and keep accounts.

Q.—What class do you get among Indians ? Mahomedans ?—*A.*—Mahomedans and Hindus.

Q.—Do you know whether the Locomotive people have ever contemplated the idea of having any technical classes for their own people ?—*A.*—The Locomotive apprentices have got a night school.

Q.—How do they stand the night school after doing work all the day in the shops ?—*A.*—They must be rather worn out.

Q.—What we heard in Calcutta was that Europeans stood it better than Indians and for that reason more Europeans went to the night schools, that is Europeans and Anglo-Indians.—*A.*—I do not think so on this Railway.

Q.—They have no idea of giving half days off for the purpose of tuition ?—*A.*—No.

Hon'ble Mr. H. J. Maynard.—*Q.*—You mention the Railway Technical School as one of the places from which boys come to you. Do they come only from the Railway Technical Institute or is there any other technical institution from which they come ? Do they come from the Hindu Diamond Jubilee Institute at all ?—*A.*—Not to my knowledge.

Q.—You have not got any experience of the boys from there ?—*A.*—No.

Q.—As regards those particular boys who come from the Railway Technical School do you think that they are unwilling to take off their coats or to keep factory hours ?—*A.*—No. I do not think so. I have got three or four of them. It entirely depends upon the men.

Q.—You cannot say generally that that kind of instruction does have the effect of making them unwilling to take off their coats and work factory hours ?—*A.*—No.

Sir D. J. Tata.—*Q.*—In Section IV you say : "Government could assist and considerably encourage industries by the establishment of hydro-electric or wholly electric power centres." Should they establish them before the industries are ready to take up that power ?—*A.*—I think if there is any prospect of an industry settling down near it they ought to.

Q.—Government will create power and then wait for industries to come and utilise that power ?—*A.*—If there is any chance of industry being there. If you find a good site for a hydro-electric scheme they might make estimates and find what the chances were and whether there was any prospect of any industry settling down there.

Q.—You mean that they will have to make enquiries whether power is available, and then announce to the public—"so much power is available here and is it possible for an industry to be established here," and, if so, that they are prepared to develop the power ?—*A.*—That is my idea.

Q.—In answer to question No. 45 you say: "In special industries if they are large enough, special technical schools on the lines indicated above should be established." What industries are you referring to?—*A.*—Take the railway for instance. They have got no regular system of technical schools.

Q.—You say: "I have trained numerous apprentices in the Signal and Interlocking Department of the Railway." Are they Indians?—*A.*—About half of them are.

Q.—What are these peoples' prospects?—*A.*—They rise to Rs. 450. They start on about Rs. 40 or Rs. 50.

Q.—Then you say: "The arrangement has worked satisfactorily and there are now in the service some highly competent inspectors so trained." About how many?—*A.*—About ten.

Q.—With reference to your answer to question No. 50 I do not quite understand what you contemplate. In the primary school you would have the workmen trained to begin with. Then in the secondary school you would train chargemen and foremen. But would they not go through the primary training in the industrial school before they go in for secondary training?—*A.*—That was not my idea.

Q.—Is not elementary education in technical work necessary for the secondary man?—*A.*—Not so much.

Q.—The industrial high school which would only accept men who had qualified in the higher educational test would train its students as managers and heads of business generally, without any preliminary training in technical schools?—*A.*—Their technical school would give them lighter mechanical training.

Q.—But they would not have the grounding?—*A.*—They would have a sound education.

Q.—How could a man come straight from the high school into the industrial high school without the preliminary training necessary?—*A.*—It would depend on how the industrial school is organised, what its curriculm is.

Q.—If he is to be put as a manager he ought to have a knowledge of the foundations?—*A.*—He will get that in a shorter course.

Q.—With reference to your answer to question 52 you say: "These rules would probably be in many cases abused." How?—*A.*—I think it is quite possible that if you draw up any rules for sending employees of private firms home at Government expense, probably the Commissioner would recommend one firm and another firm might wish to send its man.

Q.—In answer to question 77 you say that Government technical and scientific experts should be allowed to go home. Is it not likely that there would be similar abuse there also? If it is likely in the case of a private firm, it would be likely in the case of Government officers too?—*A.*—I do not think so.

Q.—You say: "At present in the Engineering Department the rules which provide for this are drawn up chiefly in favour of junior officers. I would suggest that it would be more advantageous to Government to encourage senior officers who are, or are about to become, heads of departments." If there is likely to be any abuse in one case why not in the other?—*A.*—There will be much fewer cases to deal with. Each individual is well known by the people who work the thing, while the firms are spread over the country. I do not say that they ought not to be encouraged, but it should be only in a few cases. The firms themselves ought to send their own men home if they want to.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Have you got any entrance examination for the Railway Technical Institute?—*A.*—We have not got it. There is an institute called the N. W. R. Technical Institute, but it is not a part of the N. W. R. It is run by some private people but they call it N. W. R. Technical Institute. The N. W. R. may give it some grant or aid.

Q.—You do not know how they take the boys?—*A.*—No.

Hon'ble Mr. H. J. Maynard.—*Q.*—Has not Mr. Badenoch got a good deal to do with it?—*A.*—He may have.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You say: "On general principles to encourage industries, railways should be State-managed in order to abolish abuses which appear when the management is private, *e.g.*, rebates for favoured shippers, etc." Do you know that this is a fact?—*A.*—This is simply what to might happen.

Q.—Is it a fact that Indians with the same qualifications as the Europeans get much lower pay than the Europeans in the Railway company? Are there any rules to that effect?—*A.*—The only thing I am certain about is that our Indian apprentices get less pay than the

European apprentices to start with. Afterwards they get on to the same pay. The European apprentice starts on Rs. 40 and goes up to Rs. 110, and an Indian apprentice starts on Rs. 25 or 30 and goes up to Rs. 60.

Q.—The Indian begins with a lower pay?—*A.*—Yes. In the higher grades they go on irrespective of whether they are Indians or Europeans.

Q.—We have been told that Indians with the same qualifications as the Europeans get half the pay.—*A.*—It may be. I am not sure about it on this Railway.

Mr. C. E. Low.—*Q.*—It is not the case on this Railway? *A.*—I am not sure. In my own department that is the only difference.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You say: "A committee consisting of an equal number of railway experts and businessmen should be appointed to report on this matter as I think it probably does hamper if not prevent industrial development." Do you think that company management at present is hindering the progress of the industries of the country? Is that what you mean?—*A.*—I am referring to classification of rates. It is in answer to the question about the classification of rates.

Q.—You believe that the classification of goods is too complicated?—*A.*—Yes.

Q.—In answer to Sir Dorab Tata you said that if the Government hold surveys and carry on industries themselves it will be better for the country.—*A.*—Yes.

Q.—Have you heard that Government by starting a pioneer factory in the Punjab which cost Rs. 27,000 made a profit of Rs. 2,000?—*A.*—I have not heard of that.

Q.—The previous witness said that Government were trying to make a profit.—*A.*—That is not the general case.

Sir F. H. Stewart.—*Q.*—With reference to your answer to question No. 25 you have heard of the Geological Survey?—*A.*—Yes.

Q.—What you want really is that that department should be considerably enlarged and better staffed? They are the natural people to take up the survey?—*A.*—Yes. I think so.

Q.—With reference to your answer to question No. 50, you think that the industrial and commercial school should be entirely separated from other schools. You would put them under the Director of Industries rather than the Director of Public Instruction?—*A.*—Yes.

Q.—The difficulty that has been suggested to us is that of inspection and examination at regular intervals. Do you think that will be a real difficulty? The Education Department has got its system organized and it has got a lot of officers going round and examining and inspecting schools all the time. Do you think that the Director of Industries could arrange for the systematic inspection of the schools?—*A.*—That means double the staff.

Q.—Should he do it himself or should he have a sort of expert technical committee to help him?—*A.*—They would have to have a similar organisation to that of the Education Department.

Q.—With reference to the classification of goods, there is a goods classification committee?—*A.*—It assembles every year. It is all railway people.

Q.—I think on each occasion they ask the chambers of commerce whether there are any particular suggestions to make or anything of that kind?—*A.*—They might. They meet and discuss some special difficulty which has arisen. From time to time difficulties arise about the classification. Each railway says, 'we shall discuss at the next meeting,' and each railway brings up its own difficulty. The committee does not deal with the whole question of classification with any idea of revising the whole thing.

Q.—You do not want a standing committee, but a committee to assemble and report whether the classification can be bettered?—*A.*—Yes.

Q.—Have you got any views about the working of the existing laws about patents? Do you think they are a disadvantage to Indian inventors?—*A.*—I do not know about it.

Q.—In the case of your own work you have not come across any case where the Indian inventor suffered?—*A.*—We find it very difficult to protect it in America, or England or other places. I do not say that you cannot get a man at home to take up your patent if it is a valuable patent, and unless you knew the firm there is just the chance that there might be trouble over it.

Q.—You have no idea then that India should join the International Convention?—*A.*—I do not know what the International Convention is.

WITNESS No. 362.

LALA NAND LAL PURI, *Secretary, the Punjab National Bank, Limited, Lahore.*

WRITTEN EVIDENCE.

Financial aid to industrial enterprises.

Capital.

I HAVE had no direct experience of the raising of capital for any industrial enterprise. In answer to several other questions also of a similar nature relating to my personal knowledge and experience, I may say that after practising as a pleader for 9 years I have now worked as Secretary of the Punjab National Bank, Limited, Lahore—one of the most important Indian-managed banks in the Punjab—for the last eleven years and my work has been limited to this institution alone.

During my career the capital of the Punjab National Bank, Ltd., was raised three times, *i.e.*, in 1909 from 10 to 15 lacs, and in 1914 and 1915 from 15 to 31 lacs and was readily subscribed by the previous shareholders and outside public. At the time of the latter two issues, the bank was passing through the financial crisis and the Directors offered the shares at easier terms than the pre-crisis market rate, so that there may be no difficulty in their being taken up and it was satisfactory to find that the capital was always oversubscribed. The reason was that the shareholders and the investing public had some confidence in the bank and its management. But there is no doubt that capital is very timid in the Punjab as elsewhere and the confidence in the joint stock companies has been rudely shaken by their failures and the financial crisis of 1913. In my banking experience I have noticed that several industrial concerns could not raise capital mainly because they could not inspire the confidence of the public and the promoters had no expert knowledge of the business which they started or wanted to start. In other cases the companies were not provided with sufficient capital and had to borrow from banks or had to issue debentures to meet their requirements. In this case they thus suffered from the heavy rates of interest they had to pay to their bankers. Under the present circumstances, people would not subscribe to the capital of any industrial concern unless they have seen it actually working successfully or they have full confidence in the syndicate or directorates of the concern. Confidence will be restored either by Government aid or by the promoters putting in a very large portion of their own money in the enterprise and at the same time by having the best expert and skilled advice to carry on the same.

At the present time the capital for industrial concerns in the Punjab is principally drawn from middle classes from the savings of professional men and from the profits made at Bombay or Karachi by cotton-dealers, etc.

I think the capital of the aristocracy and the capital in villages and towns which have not been tapped so far and the Native States, can be largely drawn for industrial enterprises. The Indian-managed banks had done some work in this direction by opening a large number of branches all over the Province, but by their failure the capital has become all the more shy.

So far as I know the cotton-ginning industry in the Punjab is one where more concerns have been started than can be maintained in full-time employment. This industry got an impetus by its early successes and being an industry which did not require a very large capital and perhaps very large technical knowledge, other people followed those who were in this trade and took to this line of business by setting up new cotton ginning factories in different cotton centres with the result that a much larger number of such factories came into existence. In doing this they used their own money and also borrowed a part of it from their bankers, unfair competition set in, margin of profits went down and efforts were made somewhere successfully and at other places unsuccessfully to enter into pools and combinations in order to raise their profits if possible. Having spent their all in setting up factories and having utilised some portion of their bankers' money, they found it difficult to finance their business and had to pay very high rates of interest for raising the floating capital and meeting their requirements and the failure of banks created still greater difficulties for them.

Government assistance.

I have no experience or knowledge of Government aid to industrial enterprises in the Punjab worth the name. Last year I brought the industry of a sewing machines factory at Ludhiana to the notice of the Director of Agriculture and Industries which came to my knowledge in connection with my bank and which stood in need of financial aid. I do not however know if Mr. G. M. Bahari, the proprietor of the factory, could or could not satisfy the Director and if any help was given to him or not.

The question of Government aid to industries, new or existing, is a difficult one. I would not like the whole initiative to be taken away from the people altogether. At the same time if Government takes interest in any industry or gives financial aid to it

or puts a stamp of its being a sound business concern after necessary investigation, it is sure to help in the raising of its capital and inspiring confidence in the public.

All the different methods of Government aid will suit one or other kind of industry at different stages thereof. Sympathetic attitude of the Government towards industrial enterprises being guaranteed, I would leave the nature and form of the Government aid to a Board of Trade and Industries which may be formed for that purpose with sound businessmen, official and non-official, as its members. It is also necessary to start strong industrial banks which may be supported by the Government and which may lend financial aid to the industrial concerns.

There is no doubt that Government should have some sort of control if it lends financial aid to industrial concerns. If the Government is however thoroughly satisfied about the soundness of the business and with the honesty and good management of the promoters thereof, it may be dispensed with. In the former case the Government control should be of the minimum nature to safeguard its own interest. In some cases periodical balance sheets may be considered sufficient, in others Government may appoint its own auditors, while in some the Government may appoint one Director or more as its representative having the same voting powers as others. It will depend to a certain extent on the amount of Government aid in each case, but it should not be the object of Government control that the other promoters of the industry may have no voice in the matter and the element of Government control should not be too predominant. People should be taught and should learn how to manage their own industries and Government's function may be to direct them in the right course. Government may pioneer industries and hand them over to the people on reasonable terms when they are successful. Turpentine industry started by the Punjab Government is quite a success so far as I know. Similarly Government can poineer other industries.

Banking facilities.

In my experience cotton industry and other industries in the Punjab are greatly hampered by the conditions under which they are at present financed :—

(*a*) The Presidency Bank has not, to my knowledge, given any aid to industrial concerns in the Punjab.

(*b*) The joint stock banks cannot by the very nature of their deposits afford to make advances for the purchase of machinery or for construction of buildings, etc. After the unfortunate failures of banks in the crisis of 1913 deposits do not flow in freely and those who deposit their money prefer to do so for 4 or 6 months although they were anxious to make deposits for 12, 18 or 24 months before the crisis. The banks cannot therefore make advances which are likely to be locked up. The Peoples Bank of India now in liquidation made advances to industrial concerns which could not be recovered in the time of stress and the bank had for this reason among others to close its doors. To me it is clear that the present joint stock banks cannot afford any considerable assistance in the raising of the capital for industrial concerns or make advances to a large extent.

(*c*) The rate of interest charged by the joint stock banks on the advances made to industrial concerns is high which they cannot easily pay in the early stages of the industry.

(*d*) In order to enable an industry to pay, it is necessary in these days of keen competition to start it on a large scale. For smaller industries there is no room on account of keen competition and larger industries it is beyond the power of individuals to start and finance, and there are no banks to finance them either and thus industrial development cannot take place without Government aid.

The other method for financing the industrial concerns is of making advances on the security of raw materials and on the security of manufactured goods till they are sent out to Bombay or Karachi for export or for sale. My experience is limited to the financing of cotton industries in the Punjab and the method followed by the banks is to reserve a margin of 20 or 25% on cotton, kappas, etc., and to make advances thereon with or without banks' godown keeper in possession of the goods. In this case also, since the failure of banks, the rate of interest is very high and takes away a big slice of the profits of the industry and the present banks are insufficient to meet the demands. Then the banks help in the matter of exchange and purchase demand drafts and R/Rts., drawn on the strength of the goods sent to the ports. It must be admitted that the absence of joint stock banks is greatly felt and industries feel some difficulty in this direction also. In my opinion Indian-managed joint stock banks are a great necessity for the development of industries and the sooner some sound, well-managed banks come into existence the better. They will tap such sources of capital which cannot otherwise be tapped. Along

with joint stock banks we should have some strong industrial banks supported by Government and which should have directors well versed in industrial matters quite able to investigate and judge the possibilities of industrial enterprises. Such industrial banks should not necessarily depend on deposits from the public. In case they receive deposits they should do it for much longer periods, *i.e.*, 5, 7 or 10 years. It should be their business to help the formation of syndicates and to help in raising capital for new industrial enterprises which are sound and likely to succeed. They will help in raising the fixed capital and joint stock banks will do so by financing and providing floating capital. In this way the joint stock banks can give more assistance to industrial undertakings by affording greater facilities to them.

The sugar industry and the glass industry also appear to have suffered from similar difficulties.

Co-operative societies.

I have no particular experience of co-operative societies, but I am of opinion that such societies can be encouraged to help cottage industries, etc.

Reasons for failure of industries.

I am further of opinion that most of the industrial concerns in the Punjab have failed for two reasons :—

(1) Non-provision of capital,

(2) Want of expert knowledge and management, and want of skilled labour,

and the Government aid can be obtained in both cases. It should not be the business of Government to start industrial concerns in competition with exisiting ones. On the other hand the Government should lead the way by helping new industries which are likely to succeed and lead the people to take to them. Government can, by sympathetic attitude, and by moral and material support, help and develop the industries. There should be no limitations on Government aid merely because a new enterprise competes to a certain extent with an established external trade. The Indian industries require the protection of the Government in every way till they can stand on their own legs.

To provide skilled labour, we should have a technical college in each province and labouring classes should be imparted primary education as a matter of compulsion and also industrial education.

I am sorry I have not studied the technical side of the industrial questions and other important matters relating to them and I therefore refrain from giving my opinions or impressions on the same.

ORAL EVIDENCE, 7TH DECEMBER 1917.

Sir F. H. Stewart.—*Q.*—You are the Secretary of the Punjab National Bank, and you have been so for about 11 years : had you any previous banking experience ?—*A.*—No.

Q.—Did you find it very difficult at first ?—*A.*—Yes, I had to pick it up.

Q.—And you have come out successfully during difficult times. Have you got branches of your bank ?—*A.*—Yes, we have got 24 branches.

Q.—Are they all in the Punjab ?—*A.*—We have branches at Calcutta, Bombay, Karachi, Cawnpore and Srinagar. These are out of the Punjab, and the rest in the Punjab.

Q.—Have you a board of directors ?—*A.*—Yes.

Q.—Here at Lahore ?—*A.*—This is the headquarters.

Q.—Is your staff entirely Indian ?—*A.*—Yes.

Q.—How do you recruit it ?—*A.*—We recruit it generally from those gentlemen who have had some previous experience in banking, who have worked as managers, or who have had something to do with banks before, and we also have a system of paid apprentices. We have a system of taking a graduate at a time as a paid apprentice, then we train him up and give him higher posts like managers. For the junior grades we generally take Entrance passed men as clerks. We train them as apprentices, and as soon as they learn the work we put them into these posts.

Q.—You are satisfied that the gentlemen whom you send out to manage your branches are paractical men, with practical knowledge of banking ?—*A.*—As a matter of fact the pay of the staff is not so high as to attract very good men in the Punjab at least so far as the Indian banks are concerned, and that is one drawback. We cannot have the best men.

Q.—Then you have difficulty in getting competent men ?—*A.*—Yes.

Q.—When they come to you they have no training whatever as a rule?—*A.*—Some of them have. Suppose some man has worked in some other bank, if he is out of employment we take him, or if he has worked in some other institution we engage him for our managers' posts or accountants' posts.

Q.—You refer to the difficult times which the banks in the Punjab went through three or four years ago, and you say that your bank managed to come out of them successfully; you say that you had to offer your shares on very much easier terms: on what terms did you offer?—*A.*—We offered them at par. Before the crisis our shares were selling at Rs. 80 premium, *i. e.*, they were selling at Rs. 180 per share of Rs. 100.

Q.—Even after these difficult times you have more than doubled your capital and got capital at par without much trouble?—*A.*—Both times the capital was oversubscribed.

Q.—From your experience of going through these difficult times do you think that there is any need for any special banking legislation in India?—*A.*—I think the Indian Companies Act now provides sufficient safeguards.

Q.—That does not prevent the use or misuse of the name 'bank' for instance? Now one can use the name bank and call himself a banker?—*A.*—Yes, there are some cases like that; but I do not think any particular legislation is necessary for that purpose.

Q.—You do not think it would be necessary to specify that a certain amount of the bank's capital must be paid up?—*A.*—That is provided for under the Indian Companies Act. According to the Indian Companies Act no particular amount is specified, but a certain portion of the subscribed capital must be paid up before a bank or joint stock company can commence its business.

Q.—In spite of the difficult times through which the Punjab passed recently, you don't think that there is any need for a special banking legislation?—*A.*—No.

Q.—And yet you say at the same time that these difficulties have rendered capital in the Punjab very shy?—*A.*—Yes, capital is shy in the Punjab.

Q.—Have you any specific suggestions to make as to what should be done to attract capital?—*A.*—I have suggested in my note. If the Government comes to the rescue of these institutions and if the gentlemen who start these banks or industrial concerns put in a large amount of their own capital in the concerns and are helped to a certain extent by Government patronage, then I think confidence will be restored.

Q.—You think there is need for actual Government financial aid?—*A.*—Yes.

Q.—Which is the Presidency Bank in this Province, is it the Bank of Bengal?—*A.*—Yes.

Q.—Then you recommend the appointment of a Board of Trade and Industries, that would be a Board to assist the Director of Industries, is that what you mean?—*A.*—Yes.

Q.—That would be an advisory board, would it not?—*A.*—Generally advisory.

Q.—Do you think that there are competent non-official businessmen in sufficient number in this province who could spare the time and be willing to spare the time?—*A.*—I think we could have them.

Q.—Where would its headquarters be?—*A.*—At Lahore preferably.

Q.—With reference to the industrial bank, do you think that they should not depend on deposits from the public and that it would be unsafe to allow them to receive short-term deposits.—*A.*—I do not think they should receive short-term deposits.

Q.—Your idea would be that they might issue bonds?—*A.*—They might issue long-dated bonds for a number of years, or they might receive deposits say for 5, 7 or 10 years.

Q.—But you still think that Government assistance is necessary in this case also?—*A.*—Yes, for starting industrial banks, also.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Do your shareholders belong to many different communities? *A.*—They are generally Hindus; there are a few Muhammadans and Christians, but generally they are Hindus.

Q.—Any European shareholders?—*A.*—No.

Q.—Generally your subscribers are professional men and merchants, or are they people who hoard their money? *A.*—They are professional men, and middle class men who have not hoarded their money.

Q.—The professional men form the majority?—*A.*—Yes. They have practically as a matter of fact invested their money as permanent investments.

Q.—Are meetings of the directors held once a week?—*A.*—Once a week generally; we sometimes hold them twice a week.

Q.—Do any directors, who are on the daily committees, come daily to the bank?—A.—No. We have divided the branches among the directors, and each director is in charge of 4 or 5 branches, and the papers relating to these branches are submitted to them every day.

Q.—Then the Secretary has not got discretion to do what he likes as in other banks?—A.—No, he cannot do everything that he likes He is bound by the orders of the Board.

Q.—Under the orders of the Board he takes necessary action in all cases?—A.—Yes. The cases in which the orders of the Directors are necessary are submitted to them.

Q.—You are having weekly meetings, but in the meantime if there are hundi transactions they can dispose of them as they think best?—A.—Yes, they can pass orders in the meantime as urgent papers are circulated among the Directors.

Q.—Do you think that you can get men easily for your work here in the banking department as cashiers, shroffs and others?—A.—No.

Q.—Do you not think if there is a commercial college you can get trained men easily?—A.—I think it is necessary to have a commercial college in the Punjab. It is absolutely necessary.

Q.—You say "Last year I brought the industry of a sewing machine factory at Ludhiana to the notice of the Director of Agriculture and Industries which came to my knowledge in connection with my bank; what kind of sewing machine factory was that?—A.—There is a factory at Ludhiana which is preparing sewing machines; every part of the sewing machine except needles is prepared there.

Q.—Is it similar to the Singer sewing machine?—A.—Just like Singer.

Q.—How do they prepare these?—A.—They have got their foundry, they have got all instruments to prepare every part of their sewing machines.

Q.—And they are selling their sewing machines just like Singer's?—A.—Yes, they are selling.

Sir D. J. Tata.—Q.—Is it a copy of any particular machine, or is it a machine invented by them?—A.—It may be a copy, it is almost an imitation of the Singer sewing machine and other machines.

Q.—It does not infringe any patents?—A.—No.

Hon'ble Sir Fazulbhoy Currimbhoy.—Q.—How much dividend do you pay every year in your bank?—A.—It is now 10 per cent. It used to be 11 per cent.

Q. This is the only Indian bank in the Punjab with reputation.—A. There are one or two other banks.

Q. Yours is the biggest bank?—A.—This is the biggest bank. Then we have the Punjab and Sind Bank.

Q. How are the bank rates governed here? On our side the rates for deposits are governed by the Bank of Bombay rates. How you got a standard bank rate? Are your rates governed by the rates of the Bank of Bengal?—A.—No, the deposit rates are fixed by the banks just as they think proper. For instance, they must be paying higher rates when they stand in need of money.

Q.—In the busy season the Bank of Bengal fixes the rate and the rates of other banks are governed by the Bank of Bengal rate, is it not so?—A.—I do not think they are governed here in the Punjab by the Bank of Bengal rates.

Q.—Suppose even if the bank rate is 5, the rate in the town may be 7 or 8 per cent?—A.—Yes. For instance, Amritsar has its own market rate for advances and for deposits; at Lahore the rates are generally higher. I do not think the Bank of Bengal rate governs the market rate here.

Q.—Is it because the Bank of Bengal does not advance to industries here? Do you not think that must be one of the reasons?—A.—Yes.

Q.—You cannot get advances from them at lower rates here?—A.—Everybody cannot get from the Bank of Bengal.

Q.—They are not giving advances here freely?—A.—No.

Q.—Do they advance to industries here?—A.—No.

Q.—What banking business do they do here, do they do hundi business?—A. They do hundi business or make advances on the security of Government promissory notes or debentures.

Q.—They never advance to industries here?—A.—No. Not to my knowledge.

Q.—Then you think that an industrial bank should be started in this part of the country: do you want Government to subscribe the capital or guarantee the interest, which will be better?—*A.*—I think it will be better if it is started on the joint stock system, and then Government can put in its own money in the bank as deposits.

Q.—But they have to guarantee interest?—*A.*—Of course, that will inspire greater confidence than otherwise.

Q.—And do you think that these banks ought to take money only for longer period of deposit—*A.*—Yes.

Q.—What is your experience as Secretary of a bank, do you get money for two or three years' deposit in your bank?—*A.*—Not now.

Q.—You don't get deposits for more than six months?—*A.*—We get deposits for six months or 12 months.

Q.—Do you think it is possible that such a bank will get money for a longer period? Is there any likelihood of that at present?—*A.*—If the Government is there to help the institution, I think there will be people who will deposit money.

Q.—For two or three years?—*A.*—Yes, particularly if you give a little higher rate.

Q.—Then that rate will be passed on to the industries too, is it not?—*A.*—Yes, to a certain extent.

Q.—How will they then be prosperous?—*A.*—The industrial bank rate will not be so high as in the case of joint stock banks. Now in this province for instance the Indian-managed joint stock banks pay 5½ to 6 per cent.

Q.—At what rate do the commercial concerns get advances from the joint stock banks generally?—*A.*—They are getting at 9 per cent generally.

Q.—All the year round?—*A.*—Yes.

Q.—What sort of people deposit in the banks for longer periods? Are they zemindars or other people?—*A.*—I cannot definitely say.

Q.—Is the money which the crops bring into the country in the Punjab from the different centres hoarded: where is gold deposited?—*A.*—A portion of it is hoarded.

Q.—What portion do you think is hoarded? The general belief all over the country is that the Punjab hoards more gold because the treasuries are empty; where does all that gold go? Is it going into circulation, into jewellery, or is it really hoarded?—*A.*—I think 25 per cent. or so is hoarded. The rest is in circulation.

Q.—Do you consider that money that is invested in jewellery is hoarded?—*A.*—I consider that to be a hoard.

Q.—You mean actual coin or jewellery?—*A.*—Sovereigns are also hoarded to a certain extent and some people turn it into jewellery.

Q.—The total amount is 25 per cent.—*A.*—Something like that.

Q.—What do you think was the cause of the bank failures in the Punjab? What was the cause of the banking crisis here?—*A.*—The immediate cause was that there was a campaign of calumny in the press against one or two banks—that was probably the immediate cause—and then the money of these banks was locked up in industrial concerns and they could not get hold of the money and pay their depositors. There were several other causes also.

Q.—But the real cause was that the banks took money as short-term deposits and lent that money on plant and machinery for a longer period or for an unknown period, and the banks could not pay when the deposits were demanded, was that not the real cause?—*A.*—The industries to which they advanced were not in a prosperous condition, therefore they could not freely pay back the money.

Q.—Do you think that trust is coming back and that people are again depositing in the banks now?—*A.*—It is coming very slowly; it is not coming as it ought to have come.

Q.—The market rates are getting higher now?—*A.*—Deposits are coming, but not as freely as they should have come.

Q.—Is your bank advancing money to any industries?—*A.*—We advance to industrial concerns in order to finance them in their working, that is floating capital.

Q.—Do you advance to the cotton industry?—*A.*—Yes, to the cotton industry, generally we make large advances.

Q.—Do you do it on joint security or on the credit of one man only?—*A.*—We decide that on the merits of different cases.

Q.—But you have no bar just as they have in the Presidency Banks?—*A.*—We have no such bar. In some cases we make advances on the security of stocks of cotton in the possession of the bank and sometimes when the proprietor of the factory is sufficiently well off, we make it on his personal security.

Q.—So you are not working under those disadvantages of the Presidency Banks?—*A.*—There is no particular bar against making any advance on a single pro-note or for a particular period.

Q.—Have you got any men in your staff from the College of Commerce, Bombay?—*A.*—No.

Mr. C. E. Low.—Q.—Does not the Bank of Bengal generally give loans to industrial concerns to enable them to purchase raw material?—*A.*—Well, the only way in which the Bank of Bengal advances is on joint security on the security of two parties. They do not make advances on the security of goods here so far as I know. If the Agent of the Bank of Bengal is satisfied with the two parties coming forward, he will make the advance whatever the object of the loan might be.

Hon'ble Sir Fazulbhoy Currimbhoy.—Q.—Are both parties required to be strong or only one and another is merely a clerk or a scribe?—*A.*—It rests with the Agent. They have got a guarantee broker, and if he recommends both parties the transaction is concluded.

Mr C. E. Low.—Q.—But as a matter of fact, as Sir Fazulbhoy very clearly indicated, this difficulty about two persons is very easily got over in practice, and they do, as a matter of fact, advance money to industries for the purchase of raw material not on the security of the raw material, but on the security of two banks?—*A.*—On the security of two banks they make advances.

Q.—In fact I happen to know that they have cash credits for that purpose?—*A.*—Yes.

Q.—Do any joint stock banks open cash credits for industrial concerns?—*A.*—Yes.

Q.—On what security?—*A.*—On personal security or on the security of stocks.

Q.—And have they any system of godowns?—*A.*—Yes, on the security of godowns.

Q.—What do you do, take a list of the godown?—*A.*—We send a clerk of our own who keeps the keys; he remains in charge of the godown and sees that the merchant does not remove the goods so as to reduce the value of the advance which the bank has made. He is considered to be in the possession of the godowns on our behalf, on behalf of the bank.

Q.—You say that they had more gins in the Punjab than there was cotton for them to gin: has not the cotton area subsequeutly increased?—*A.*—Yes, it has increased I think just now on account of larger cultivation.

Q.—But you have bad cotton years also?—*A.*—This time the crop has been a failure.

Q.—Do you think the cotton area is going to overtake the capacity of the gins?—*A.*—It might. If we have a good crop this time I think all the ginning factories would have sufficient work to do whole time.

Q.—Coming back to the question of the sewing machine factory, you are aware that the success of the Singer sewing machine is largely due to the widespread organisation they have all over India. Is your friend attempting anything like that in a small way?—*A.*—He is doing it in a very small way. This Mr. G. M. Bahari, I think, was the agent of the Singer sewing machine or some other machine.

Q.—He was perhaps the agent of a German machine?—*A.*—I think it was Durkopp, but then probably he left that; he is trying to introduce his own machine; he has now got his own factory, I have seen that factory myself. It was in working order, he prepared every part of the machine excepting, as he told me, the needles; he cannot prepare the needles. All the other parts of the sewing machine are prepared in his own factory and put together there.

Q.—How does he sell? Does he sell on the hire-purchase system, or does he sell it cash?—*A.*—He sells for cash. As a matter of fact he cannot produce a very large number of machines. As he told me, he was producing about 20 machines or 15 machines a month, and he was selling them at 80 or 85 rupees or something like that per machine.

Q.—He was selling them for cash?—*A.*—Yes.

Q.—He was not attempting this hire-purchase business because he was not producing on a large enough scale?—*A.*—No.

Q.—You propose a Board of Industries: what is your reason for proposing a Board of Trade and Industries?—*A.*—In order to deal with the methods in which Government can assist industries, I have suggested in my note that if there is a Board of Trade or a Board of Trade and Industries, they can look into the question of the method in which Government can help each individual industry. For instance, in some cases the Board of Trade may be of opinion

that an industry can be assisted in a particular way, in other cases they may hold a different opinion, and all those methods which have been suggested in the question could be considered by a Board of Trade established for this purpose, so that they may recommend the most opportune and most proper method in which an industry can be helped by Government.

Q. Do you know of any other country in which they have such an arrangement?—*A.*—There is a Board of Trade in England.

Q.—But that consists of one member only, a single minister?—*A.* -I do not know.

Q.—What you want to do is to get sound businessmen to be at the disposal of Government to advise before giving any particular form of assistance?—*A.*—That is my suggestion.

Q.—But you realise that even a businessman is helpless an his turn without expert advice?—*A.*—I think expert advice is absolutely necessary for the Board before taking up the question of Government aid.

Q.—And any industrial bank would also require expert advice, would it not?—*A.*—Certainly.

Q.—You say, "the joint stock banks cannot by the very nature of their deposits afford to make advances for the purchase of machinery or for construction of buildings, etc.," that is to say, they cannot lock up short-term deposits in non-liquid securities in that way. Have the Presidency Banks any funds suitable to be locked up in such long term loans or non-realisable securities?—*A.*—Well, the Presidency Banks have got Government funds, the public funds.

Q.—Do you know what these Government funds are for? Do you know what they run down to in busy times?—*A.*—But I think the Presidency Banks can find a certain proportion of their working capital to be invested in this direction.

Q.—There is no reason why the Presidency Banks any more than any other Indian bank should be able to invest in that way. Now you say that they have got public funds, but these public funds also from the very nature of the things are short-term deposits, except that Government are bound to maintain a minimum balance of 50 lakhs?—*A.*—That is one of the reasons why they can invest.

Q.—But this short-term money cannot be safely used for advancing to industrial concerns. I do not see how the fact that a certain amount of Government money is kept in reserve helps you in the matter. Supposing Government have to spend a lot of money on a famine or a war, how will they be able to realise their money if they advance it to industrial concerns for plant and machinery?—*A.*—I do not recommend that they should spend a very large portion of their money in this direction. Of course it is necessary for them also to make liquid investments; but I think that a certain portion of that money, the deposits from large depositors, could be diverted in this direction.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Replying to Mr. Low you said that the Presidency Banks should invest in these industries: what is the obligation on them? Is it because they have 50 lakhs of Government money with them?—Is that the obligation you want to put on them?—*A.*—Yes, because they are the treasurers of Government in a way and are the biggest banks in the country.

Q.—But this 50 lakhs remains with them also in the slack season when money is cheap and they don't need money, and even if Government keeps 2 crores in that way that will not do them any good: they are giving no interest of course, but they are not at the same time getting any interest: it is only in busy time that they get this 50 lakhs without interest, but they are at the same time you know financing crops, are they not? Does that not help too?—*A.*—Yes.

Q.—Why, they have got their own shareholders too?—*A.*—Yes.

Q.—And they ought also to work in their interests?—*A.*—Quite so, but I think that the present financing agencies are insufficient to finance industries.

Q.—Don't you think, as you said in answer to one of my questions, that if Government starts an industrial bank, that can finance industries better instead of the Presidency Banks doing this?—*A.*—The Presidency Banks under the Presidency Banks Act cannot finance industries practically speaking.

Q.—Then you suggest that there ought to be an industrial bank, which would be a good agency for financing industries?—*A.*—Yes.

Mr. C. E. Low.—*Q.*—Which do you think must come first, industries or industrial banks?—*A.*—As I have said, Government aid being guaranteed to the industries, if they start industrial banks, proposals for advances can be entertained by them. After all there is no absolute dearth of industries, the industrial banks can help the present industries as well as take part in the starting of new industries.

Q.—Do you think there will be scope for an industrial bank here in the Punjab with its present state of industrial development?—*A.*—I think if there is an industrial bank, it can help the industries to a great extent.

Q.—What I mean is this : the industrial bank must necessarily have a very large proportion of share capital.—*A.*—Yes.

Q.—And it must also take long-term deposits in order to pay the people who subscribed to share capital in ordinary shares. Well, you realise of course that the business of an industrial bank is not like that of ordinary banks, and shareholders will expect large dividends on their money. In order to obtain large dividends with the working capital very largely made up of share capital, the industrial bank will have to make big profits ; that is to say, it should share to some extent the risks of the industrial concern to which it advances money as regards profit and loss, because if it loans at high rates it would injure the industry. Now do you think that there is a sufficiently wide basis of different kinds of industry at present for an industrial bank to enter and share to some extent the profit and loss without coming to grief ?—*A.*—There is no doubt that an industrial bank will have to share the profit and loss of the industry. They have to go into the question whether the industry will prosper or not because, by the very nature of an industrial bank, they will have to take expert advice, and they will have to take into consideration whether a particular industry to which they are making an advance or to which they are subscribing their capital, would be flourishing or not There is no doubt of that, but it is the very essence of the thing that the industrial bank should undertake this business in order to help industries.

Q.—Supposing an industrial bank like this says to the industrial concern " whether you make a profit or whether you make a loss, you have got to pay me a certain rate of interest, say 5 per cent." that is one way ; the other way is for the industrial bank to receive a certain amount of interest but also to take shares in that concern ; that is what I mean when I say that the industrial bank would have to share the risk of the industrial concern. If the industrial bank merely charge heavy interest, that will not help the industry ?—*A.*—That will not help industries no doubt, a heavy rate of interest will not help industries, but there is no other way out of the difficulty.

Q.—If you have all the industries more or less of one kind, if the bank makes 80 per cent. of its advances to industries based on the cotton trade for instance, and only 20 per cent. to other industries, the bank is taking a risk ; would it not be much better to distribute that money over different kinds of industries and thereby minimise the risk ?—*A.*—There should be certain classes of banks which should do cotton business.

Q.—My suggestion is that the wider the basis of the industries to be financed, that is, the more different kinds of industries to which the industrial bank advances, the less will be the risk. I think you have pointed out yourself in your evidence that one cause of the bank failures in the Punjab in 1913 was that they put too many eggs into one basket, namely in cotton trade.—*A.*—As a matter of fact cotton was one of the main industries the banks financed at that time, but they also financed other industries.

Q.—They mainly financed cotton ?—*A.*—Because cotton was the main thing in their hands at that time.

Q.—Then if they invest in a large number of different industries you want a considerable number of experts, and you think Government can help in that way ?—*A.*—Government can help them in the matter of experts also.

Q.—You probably know perhaps that in Germany the industrial banks have 300 or 400 directors in all sorts of different concerns, so that when a new proposition was put before the bank, the bank could ask its particular expert to advise it from the technical point of view. You realise, don't you, that it would take a very long time to work up to that stage here ?—*A.*—Of course it will, we have to develop slowly and gradually ; it will take a long time to reach that stage.

Q.—Then don't you think that the industrial bank would have first to start by doing a good deal of non-industrial business ?—*A.*—I should not like to stop them from doing non-industrial business.

Q.—Do you suppose that industrial concerns could be started at once before the industrial banks ?—*A.*—No, I do not think. They must also develop gradually.

Hon'ble Mr. H. J. Maynard.—*Q.*—Your bank I think survived when a good many other banking and industrial concerns went into liquidation; that of course was no doubt due to good management, but can you suggest any special reason why you think that the kind of management that your bank had and the system pursued was more likely to lead to survival than in the case of the other banks ?—*A.*—The reason of the survival mainly was that we realised our investments to a very large extent at the time of the stress, and we could pay our depositors. The strain continued for two years and we had to pay about a crore of rupees which we realised from our debtors ; we could realise that money, whereas the others could not.

Q.—The reason for your being able to realise that money whereas the others could not was that you chose your investments wisely?—*A.*—The Board made investments more carefully.

Q.—Is there anything in the constitution of your bank which differs from the other banks which failed? Are you all in any way specially connected together?—*A.*—No.

Q.—Specially disposed to support one another?—*A.*—There is nothing particular in the constitution of the Board.

Q.—Another thing I want to ask if I may do so without asking you to say anything confidential, and that is: when the crisis was on, did you approach the Bank of Bengal for assistance?—*A.*—Well, we did.

Q.—You approached the provincial branch of the bank?—*A.*—Yes, we approached the Lahore branch.

Q.—So far as the provincial branch was concerned, did you get a sympathetic response?—*A.*—We did.

Q.—What was the security on which you proposed to borrow?—*A.*—The idea at that time was this: as we were rather anxious to make sufficient provision for any demands that might come on the bank, we wrote to the Bank of Bengal asking them if they would undertake to make us advances on the security of Government paper.

Q.—What did they reply?—*A.*—They in their reply said that they could accept only Government securities, but they said, whenever you actually stand in need of money we will consider the matter, that was their reply.

Q.—That was the reply of the provincial office?—*A.*—Yes.

Q.—Then ultimately?—*A.*—Ultimately some other banks also approached their provincial branch and offered securities, but the head office did not care to make advances on the securities offered by these banks.—*Q.*—Were they Government paper securities?—*A.*—They were paper securities, not Government securities; in our case it was Government paper security.

Q.—Do I understand you to say that the head office did not advance money to your bank on the security of Government promissory notes?—*A.*—As a matter of fact we actually did not need money, we only wanted to make arrangements; in that case they replied they will consider the matter when we actually stand in need of money.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Would they have given money if you had asked?—A.—Well, I think they would have.

Hon'ble Mr. H. J. Maynard.—*Q.*—Were they prepared to advance money on the security of promissory notes or did they refuse?—*A.*—As a matter of fact at that time my bank was not satisfied with the reply we received from the Bank of Bengal. They got an idea that they were asked to operate on securities which they did not like to do at that time.

Q.—The Bank finally suggested that you should sell your Government paper?—*A.*—Yes, but we did not on account of the low prices which were ruling at that time.

Q.—Was that the impression given or you probably got a letter?—*A.*—We got a letter in which they said that they will consider the matter at the time when we stand in need of money. It is just possible that they might have refused it at that time.

Q.—What I want to know is, as regards the attitude of the provincial manager here and the attitude of the head office in Bengal, did you form any impression as to the more sympathetic attitude of the provincial manager than of the head office?—*A.*—Yes, the impression was that the Lahore branch had recommended loans for the other banks which failed as well as for us, but the head office was not agreeable to make advances.

Q.—Did you draw any inference as to the probable attitude of a provincial institution as opposed to an institution outside the province with its head office outside?—*A.*—The idea at the time was that if the head office had been in the Punjab it would have advanced the money.

Q.—The head office would have been more sympathetic if it had been in the province?—*A.*—Probably.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Is it the case that at a certain time certain money had been advanced by Government to the Presidency Banks in order that they might assist the market?—*A.*—Yes, I also heard about it. It was said that a certain amount had been placed at the disposal of the Presidency Banks for the purpose of helping the cotton trade.

Q.—In what year was that? *A.*—It was I think in 1914.

Mr. C. E. Low said that it was in September 1914 but that it could be verified.

WITNESS No 363.

SARDAR JOGENDRA SINGH, *Taluqdar of Aira and of Iqbalnagar.*

*WRITTEN EVIDENCE.

Financial aid to industrial enterprises.

Capital.

(1)—I have no personal experience.

(2)—The capital at present is drawn from a very small number of investors and if industrial development of India is to proceed the whole country will have to understand the benefits of joint stock business carried on large and economic lines. The only way to appeal to a larger body of investors is to prove the advantages of joint stock business. As an investor I have always felt the uncertainty which it implies when the Board of Directors is not drawn from among men of business experience. An assurance of good management by men of experience who have won confidence will greatly facilitate the flow of capital. Capital will readily be forthcoming if the prospect of good profit is ensured. A Government guarantee will provide the necessary insurance and if capital is sought in small shares with good prospects of profit, small savings of millions will make the raising of capital easy.

(3)—I have no personal knowledge. The factories that cannot find full time employment must have been started at wrong places without any adequate appraisement of available supply. What has happened in the past is the starting of concerns by men who had no business training. They often started business without careful estimate of the resources of the locality where they started business and the result was that factories could not find full time employment. Now and again a capable man, elated by early success, started too many things and without the co-operation of a trained staff got himself into a tangle. The pressure of population and the productive resources of the country, so far as one can see, for many years to come can give full time employment to any factory that is started on proper lines insuring a good wage to the worker and an adequate profit to the capitalist.

Government assistance.

(4)—Once again I have to plead no personal knowledge, but I am aware of the industries started in Madras by Mr. Chatterton and the success attained in Germany and Japan. In fact Germany and Japan have built up their industries by Government aid:—

(1) I don't believe in grants-in-aid.

(2) Nor in bounties or subsidies. It often means waste of public funds.

(3) As an inducement to capital, a Government guarantee of a minimum profit combining insurance of good management and Government supervision would undoubtedly attract capital. The question of a refund is not likely to arise except in case of a failure and then there will not be any large assets to draw a refund bill on. Generally speaking Government guaranteed industries are likely to pay much higher dividends than the guaranteed interest.

(4) I think loans without interest in special cases and with reasonable interest in others in the beginning will help to foster business. As banking facilities grow the need of Government advances will become less.

(5) I am in favour of the supply of suitable machinery on the hire-purchase system but of course it only applies to small machinery.

(6) To raise share capital, on the same basis as public capital in early days, will help much to popularise investment of capital in joint stock business.

(7) The guaranteed, or a preferential Government purchase in India will no doubt help in fostering industries. The Government should as a rule purchase Indian produce in preference to outside produce.

(8) I don't see any reason to exempt profits of new industries from income tax. As soon as an industry begins to earn profit it has passed the stage when it required such help.

(6)—In all cases in which the Government aid has been given, Government officers should audit accounts and a Government Director should be on the Board till the business is firmly established and the Board of Management got well in the saddle.

Pioneer factories.

(7)—I think pioneer factories in some cases can do very useful work. For instance, the aluminium and chrome leather factories in Madras have done good pioneer work. In the manufacture of glass, the finding of suitable materials, including wood pulp for making paper and manufacturing of chemicals, there is an urgent need of Government pioneer factories.

* See also additional written evidence printed after oral evidence.

(8)—The pioneer work should be more in the nature of a practical demonstration and research than actual manufacture on a large scale. Such pioneer work is outside the domain of private enterprise and there need be no fear of competition. Once research and demonstration prove the success of an industry it will be taken up by capitalists and thus automatically indicate where Government work should stop and private enterprise take its place. I don't see why there should be any hesitation in starting Government managed industries. The old English idea of leaving industries to capitalists was started by the capitalists. The war has well nigh exploded it and I believe it is not going to occupy its old sacredotal place again. Nationlisation of land has been a dream of many people and the nationalisation of industry must follow.

Financing agencies.

(9)—I cannot specify industries as I have no direct connections. I have heard that financing of industries is not satisfactory. Many promising industries languish to death because full financial support is not available. This is inevitable in the present transitional period. The question will find a solution when a few industries become strong and command confidence and credit. Indian banks will then find in joint stock companies a safe and a liquid security. The establishment of a State bank with strong branches in every province as recommended by the Financial Committee of the Secretary of State can be of great help. The State bank would accommodate Indian as well as English managed banks when trade demands are strong. There has been a good deal of complaint that Government did not help Indian managed banks at the last crisis and the complaint is not altogether without foundation.

Co-operative societies.

(11)—I am not aware of any industry in the Punjab working on co-operative lines. In the United Provinces there is a successful co-operative carpenters' society. It is no use going into the details of its organisation as all the information can be found in the United Provinces report.

(12)—I am strongly of opinion that co-operative societies, so far as the Punjab is concerned, promise the best possible results. I am only concerned with things that grow and to my mind there is great room for the organization of co-operative societies as the feeders of large industries ; also as agencies for placing the produce of land in the best possible markets of the world. The societies could have their own stores and elevators and grade and classify their produce to suit the demand. Take, for instance, a village in the Punjab growing wheat, sugarcane, oil-seeds and cotton ; under present conditions the cultivator loses from his matured crop of cane 35—50 per cent. of the yield in the simple process of extraction of juice and making of *gur* merely because his tools are bad and his open pan boiling is unscientific. In the October issue of the *Agricultural Journal of India* the question has been fully discussed by Mr. Wynne Sayer. The article deserves the attention of the Commission.

The marketing of his other crops is also wasteful. He sells his seeded cotton (Kapas) losing the seed and a higher price he could have obtained if it was ginned and baled. Similarly he loses on the sale of oil-seeds. The Punjab grows something like 414,110 acres of sugarcane. The area under cotton is 1,064,581 acres and the area under oil-seeds is 1,307,577 acres. Supposing a small co-operative factory were started in the centre of a group of villages and financed by the Government on the joint responsibility of the villagers, the gain to agriculture would be immense. What the villages need is a small power station equipped with a sugar factory capable of dealing with the produce of 1,000 acres of sugarcane, an area which will generally be found under this crop among 8 or 10 villages. The factory need not attempt more than power extraction and steam boiling which alone would mean a gain, on an average, of 35 per cent. If crude sugar were manufactured and molasses sent to a central factory the gain would be even greater. The factories could also be equipped with ginning mills and oil presses.

One village equipped with such a factory in the centre of 10 villages will be able to deal with the produce and send it to a central refining factory to turn the crude article into refined oil or sugar and make use of the bye-products. The small village factories will thus lead to the creation of large central factories. They will serve as feeders. I don't see any reason why a great sugar manufacturing, cotton weaving, and oil refining industry should not spring up in the Punjab. The introduction of co-operative village factories will lead to the cultivation, improvement, and extension of the economic crops such as sugarcane, cotton and oil-seeds. It will not only stop there but help the growth of large sugar and oil refining and large weaving factories, capable of making the best use of all the bye-products which are now lost. There is no reason why cotton weaving should not succeed in the Punjab when Japan after buying cotton from the Punjab can still make profit. Labour in the Punjab is cheaper than in Bombay. A good centre for a weaving industry can be easily discovered somewhere in the shadow of the hills, where not only the required humidity in the air can be secured but electric power can be generated

from one of our large rivers. I am for making the central factories national in the same way as the co-operative factories will be national. The question of finding funds will not be difficult. The Punjab has invested in the War loan largely. Most of this money has come from the villages. I have not the least doubt that the village people will have no objection to the diversion of their capital in the Government loan towards the creating of a national industry. The central factories under good management will serve as pioneers and as an incentive to the capitalists to make money in new industries which have been discovered for them. More than any other Province the Punjab is in need of industrial development. The standard of living in the Punjab has been rising while no new sources of production have been discovered. The pressure on land is tremendous and holdings in some places have been reduced to the fraction of an acre.

Limits of Government assistance.

(13-14)—To my mind State-managed industries are not likely to compete with existing industries. In the coming years there will be room for all. The country is wide enough to permit the growth of many new industries. The State will not take up industries which are prospering already. It will take up new industries and help them to fructify. Private enterprise will have a fair field and an open market. The comparatively more economic management will ensure for private concerns an advantage over the State-managed concerns which will be sufficient protection for all industries which are promoted by private enterprise.

II.—Technical aid to industries.

Technical aid.

(15-16)—I have no experience of technical and scientific aid in the domain of other industries than that of agriculture. In agriculture the agricultural experts are doing very useful work. In the Punjab for instance by careful selection a new type of wheat (Punjab 11) has been introduced which is hardy and gives better yields. Similarly 4-F. American cotton which Mr. Roberts of the Agriculture College, Lyallpur, has produced has taken hold of the Punjab. This cotton fetches better prices and is very hardy. For instance in this year of heavy rainfall indigenous varieties have suffered a loss of nearly 12 annas in the rupee, this variety has only lost 6 annas in the rupee.

(17-18)—I am for giving the services of Government experts free whenever required. As experts lent by the Government will not be servants of any private firm and merely on deputation, I do not see why any restrictions should be placed as to the publication of the results of their researches. The old idea of monopoly by capitalists is played out and in the future all discoveries should belong to the nation as a whole. The idea of private *versus* State enterprise had its origin in the desire of the capitalist to keep things in his own hand. The movement towards democracy is slowly exploding the myth and there is no reason why the system should be perpetuated in India. In industries helped by the Government the endeavour should be to make the concerns national. The great oil fields in the Punjab, the cement works which must be started should be all national and run by national capital.

Demonstration factories.

(19-20)—There should be demonstration village factories in every district to make sugar, crush oil, gin cotton and as these multiply and make available sufficient material a central factory should be opened under Government management.

Surveys for industrial purposes.

(25)—Yes, the existing knowledge of the resources of the country should be supplemented by further surveys.

(26)—The resources of each district, agricultural, forest and mineral, should be carefully surveyed by experts. The object should be to ascertain all the buried wealth of the land, agricultural and non-agricultural, with a view to further development.

(27)—The result of these enquiries should be published in bulletins which should be sold for a small price and periodically advertised in the papers.

(27*a*)—I suppose they are useful but I have no experience.

III.—Assistance in marketing products.

Commercial museums.

(28-29)—I have hardly any experience of commercial museums. They, perhaps, serve a purpose in bringing to the notice of the market the available produce, but I don't see any use in multiplying them. Speaking generally supply and demand adjust themselves automatically.

(30)—The best sale agency is the co-operative agency and its growth should be helped. The cottage industries hardly produce anything for distant markets except in special cases such as Benares silks and sarees and other precious things, and for them an emporium may be useful, but for village industries nothing of the kind is needed as they only supply the local demand.

(30*a*)—I don't think travelling exhibitions will be of much good except to demonstrate the use of improved tools and machinery. Exhibitions.

(32-33)—I would make demonstration exhibitions popular and associate them with fairs to make them sufficiently attractive to bring sellers and buyers together.

(34)—Yes, Indian trade representatives should be appointed in all countries. They will be not only useful in pushing Indian products but will be able to study the requirements of other countries and endeavour to organise Indian supply. These representatives should be Indians, men with actual experience of business and liberal education. Trade representatives.

It is rather a large question to define their duties, but I suppose the programme which the trade representatives of other countries follow provides a good and safe model.

(36)—I don't think so. Special deputations of men should be arranged to study inter-provincial conditions of commerce and trade, supply and demand.

(37)—Yes, all departments should publish the lists of their requirements and exhibit the samples showing the standard and the pattern in a commercial museum in all large towns so that makers may compete for the demand. Government patronage.

(38)—I have no idea of the present rules or the system.

(39)—More banking facilities will no doubt be required. I have already given my ideas on this point.

IV.—Other forms of Government aid.

(40)—The supply of raw material such as forest produce should be made available on favourable terms. The advantages of monopoly should not determine the prices. What I mean is that the prices of raw material should not prohibit the development of kindred industries. The price and other facilities should be so regulated as to allow a fair margin of profit to the manufacturer. Supply of raw material.

(41)—I don't know how the land policy of the Government can affect industries not connected with land. If the question relates to agriculture, then surely land tax, as it absorbs something like 50% of the landlord's assets, is an important determining factor in the prosperity of the people. The subject is too big and one could write reams on it. The differences of land tax from district to district and province to province are so great that it will need a special enquiry to understand its incidence and its true relation to agricultural prosperity. Mr. Purser who was engaged in the settlement of Jullundur once instituted an enquiry as to the food required for the population that the district supported at rates which obtained in jail. He found that supply hardly met the food demand. Rai Bahadur Ganga Ram in his interesting book " The Agricultural Problems of India " has come to a similar conclusion. He puts down the food required for the population at 77 million tons and the produce at about 77 million tons also, out of which 5,282 thousand tons are exported. I strongly hold that revisions of assessment leading to progressive increases of revenue should be stayed and all the different provinces of India allowed to reach a uniform level. The required increase can be raised by introducing an export duty on produce of land. It will bring in the required revenue and at the same time tax only the surplus offered for export, and all the provinces of India will equally share the burden. Except in large towns where land values have risen I don't think any concession is necessary. The Government of course could acquire and give land for the development of industries on a long lease and on favourable terms.

(43)—I don't know anything about it. The law should provide the option, if it does not exist already, to enable the Collector to acquire land for private industrial purposes in the same way as for public purposes.

(43-*a*)—The question is not clear. In many parts water means everything and its use for irrigation is almost invaluable, and another use that can be made is to harness the streams, wherever conditions permit, to generate electricity.

V.—Training of labour and supervision.

(44)—I think lack of primary education stands in the way of many improvements.

(45) (*a*) (*b*)—I don't know what is being done in larger industrial towns to improve the efficiency and skill of workers by introducing elementary education. In the villages primary education has hardly made any impression. I am afraid that when agricultural education receives attention more thought will be given to the secular side than to the religious side ; and man cannot live by bread alone. The education of the heart which makes a peasant happy and contented, if it is replaced by mere literacy, is not likely to compensate for the larger loss of a touch with the Divine. All schools for workers and

agriculturists should be denominational and under religious teachers. Religious training should occupy the first place and literary education should be carried beyond lower primary standards. Promising boys should be given special agricultural and industrial instruction in central agricultural and industrial schools.

Apprenticeship system.

(46)—The old Indian system was based on apprenticeship and even now for practical work it offers the best possible training.

(47, 48, 49)—I have no experience of industrial schools.

(50)—The technical colleges should be under the Department of Industries so that there may not happen a divorce between the objects and the actual teaching of the school. Educational Inspectors for these schools should be under the Industrial Department. I don't approve of a dual control which rarely ensures harmonious work.

Training of supervising staff.

(51)—The supervising staff after ordinary training should serve their apprenticeship in factories and prove their fitness before they are given supervising work.

(53)—I would rather that they served their apprenticeship in well managed private business concerns, but in the absence of such concerns actual work in Government factories ought to be very useful. Lyallpur Agricultural College for instance is turning out very good agricultural assistants.

Mechanical Engineering.

(54)—I don't know.

(55)—Yes, the tests should be uniform and require a good deal of real knowledge and an affection for the machine. There should be some kind of law, if it does not exist already, providing for professional supervision of large factories.

VI.—Official organisation.

(56)—As far as I am aware no organisation for the development of industries exists in the Punjab. The Director of Agriculture is supposed to look after industries besides a hundred other things.

(57, 58, 59, 60)—There should be a Director of Industries with actual business experience and a trained staff to assist him. He need not be a technical expert but he should have the option of employing experts. He should be assisted by a Board of Industries which should be composed of business men and technical experts; at least half the members should be Indians. The Director assisted by the Board will be competent to consider all proposals of private promoters of new business with reference to the question of guarantees and financial support. The functions of the Board should be both advisory and executive. The Department ought to have an adequate budget grant and the option to use these funds with the approval of the Board of Industries. It should have the power to grant loans, guarantee interest, sell machinery on hire-purchase system, and work pioneer factories. The Board may also serve as a model Board so that private factories could follow its methods of organisation and management.

(61)—My reply to foregoing covers this.

(62)—There should be an Imperial Board with an Imperial Director of Industries to co-ordinate the Provincial work and bring it in touch with other parts of the Empire.

Cottage industries.

(62-*a*)—So far as the Punjab and United Provinces are concerned ordinarily the cottage industries are merely confined to weaving of coarse cloth. I have my doubts as to any great extension of cottage industries. I strongly believe that energies devoted to the organisation of village factories, to deal with agricultural produce, promise better results than useless endeavour to help industries which are now out-of-date, and cannot compete with power looms and large manufacturing concerns.

Technical and scientific departments.

(63)—As I said before there is the Director of Agriculture who looks after industries also. The change I recommend is the formation of a separate Department with an Advisory Board.

(64)—The formation of a new Imperial Scientific and Technical Department is urgently required to carry out industrial survey, research and scientific study of all industrial matters and to help in furthering the development of promising industries.

Imperial departments.

(65). The Imperial Department may be divided into two branches—

(1) Scientific.

(2) Technical.

It should be recruited both in India and England ; the men best qualified for the work should be selected.

(66)—If the Department is altogether separate from the Imperial Director of Industries then the head of the Department will have all the powers of a Principal of an institution and have the freedom to initiate research and supervise technical training, working towards the co-ordination and organisation of technical work in various provinces ; occupying a similar position to that of the Director-General of Agriculture.

(67)—The Industrial Board of a Local Government must act under the direction of the Local Government.

In all matters such as agricultural produce and agricultural industries the Local Government should organise its own technical and scientific departments. Provincial departments.

(69)—Under the control of the Provincial Board of Industries presided over by the Director of Industries.

(70)—On terms sufficiently liberal to attract good men.

(71)—I cannot say much on this point. I think a beginning should be made by starting central technical institutions in all provinces, but their work should be confined to the immediate needs of the provinces and allowed to develop gradually in response to the growing needs of the Province. Technological institutions.

(71-*a*—72)—I think for the present two central technological institutions will meet the needs of the whole of India. The Provinces should, however, provide a large number of scholarships to enable students to study at the central institutions.

(73)—The central institutions should supervise the smaller provincial institutions carrying on local research. The institutions should be controlled by management Boards. There is an impression that if technical education was provided, technical employment will follow as a matter of course. This is not correct. I have known men highly trained after finishing their education in England or on the continent wandering in search of employment. Another mistake that is often made is to expect a man just returned after his training to pioneer and manage new industries. This is too much. Technical education should be provided to meet the demand for trained men. Pioneer industries must have experienced management. To expect a young man immediately after finishing his studies to pioneer an industry not only on the technical side, which he may be quite capable of looking after, but on all sides, is expecting too much.

(75-76)—I have no knowledge.

(77)—Foreign research scholarships should be started and enterprising individuals deputed to study conditions in other lands.

(78-79)—In all the industrial towns there should be libraries of reference. Books on scientific subjects should be supplied to existing libraries.

(80-81)—I cannot say as I have not studied the subject.

(81-*a*)—The Municipal and Local Boards could greatly assist by founding scholarships and pioneering local industries.

Statistics and Commercial Intelligence.

(82)—I do not know. Statistics.

(83)—The distribution of commercial intelligence ought to be on a larger scale. Special information should be published in provincial vernaculars and distributed as a supplement to various newspapers. Commercial intelligence.

(84)—The Indian Trade Journal is useful but it is not widely circulated. It ought to be sold cheaply and attempts should be made to attract readers. Perhaps it will be cheaper and ensure larger circulation of the information desired to be conveyed to the public if it were supplied to the ordinary newspapers. Arrangements can be made for a reasonable consideration with existing weekly and monthly magazines to give a page or two to the trade notes supplied by the Director-General of Commercial Intelligence. This will secure space for the trade notes in established publications and thus lead to a wide distribution of the information. Indian Trade Journal.

(85-86)—The foregoing answer covers my reply to this question. The trade notes will have to be translated for various vernacular journals. Special monographs.

(87)—These publications really never reach the public. Persons interested in a particular subject search for and make use of such publications as they can find, but the

general public rarely comes across some of the most valuable information which can be found in official reports and bulletins. Useful information should be published in vernaculars and distributed freely.

(88)—An industrial vernacular journal in each province may possibly do much to awaken interest.

Other forms of Government action.

Certificates of quality.

(89-90)—I don't think any certificates of quality are required. Anything of the kind would only hamper trade.

Transport.

(97)—The want of good roads greatly hampers internal trade. The improvement of communications is wanted more badly in Oudh than in the Punjab. I think District Boards should periodically institute enquiries and take up the opening of new communications seriously. As it is most of the money is spent on existing roads which connect official headquarters. No attempt is made to start feeder railways which will be found more advantageous than money spent on metalled roads, etc.

(99)—Feeder lines are required to connect remote villages with trade centres. The capital can be raised in the district itself and the attempt should be ultimately to have District Board owned feeder railways adding materially to the resources of these Boards.

Hydro-electric surveys.

(102)—Sir Louis Dane had some valuable ideas on the subject and though his ideas suffered an eclipse in his time they are now slowly coming to the fore. A hydro-electric power survey in the Punjab will reveal the immense power that now runs to waste ; even the canal-falls have not been harnessed. The whole matter should be carefully investigated by a committee of experts. Indeed another Irrigation Commission is required to take into consideration the possibilities of further extension of irrigation and the uses of water power.

(109)—I don't think jail industries compete with private industries.

ORAL EVIDENCE, 7TH DECEMBER 1917.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—What do you think of the hoarded wealth of your province; do you think people hoard money here too?—*A.*—Oh yes, I think there is a certain amount of money in the province.

Q.—How can this hoarded wealth be brought out?—*A.*—A central bank should be started.

Q.—You say in the 3rd paragraph, "The pressure of population and the productive resources of the province, so far as I can see, for many years to come, can give full time employment to any factory that is started on proper lines, insuring a good wage to the worker, and a profit to the producer." What are the real earnings of the people here?—*A.*—The wages of an unskilled labourer vary from 8 annas to one rupee a day.

Q.—What was it 5 years ago?—*A.*—Very much lower. The wage depends upon the price of food, and price of food has almost trebled.

Q.—Have the earnings of the educated class increased?—*A.*—No. The educated class is very hard hit. The old salaries remain practically unchanged while the purchasing power of the rupee has been going down.

Q.—In the 4th paragraph you say, "I am aware of the industries started in Madras by Mr. Chatterton, and the success attained in Germany and Japan." What industries do you refer to?—*A.*—I refer to the aluminium and leather industries in Madras.

Q.—You don't believe in grant-in-aid?—*A.*—No.

Q.—What are your reasons for saying so?—*A.*—I don't approve on public grounds. A grant-in-aid is never adequate and a small grant very often means waste of public funds. Any paying industry under good management could do without a grant-in-aid.

Q.—As you know, excepting the business centres of Bombay and Calcutta, in other parts of the country many people want to go in for business; they know what is profitable but have no money to put in. Don't you think that either a grant-in-aid or a bonus or subsidy would be very helpful to such people?—*A.*—Grant-in-aid to help a new industry, if it is adequate, may be useful otherwise it may mean waste of public funds.

Q.—Do you know how the industries of Japan and Germany have prospered?—*A.*—They are, some of them, bounty fed and I have no doubt if Government helped Indian industries to the same extent, safeguarding waste, bounties may help. I am only against inadequate grants.

Q.—And the subsidies and bounties too ?—*A.*—Bounties properly given might help industries very much.

Q.—Don't you think, if a shipping industry was started in the country to compete with any other part of the world, that could only be started with the help of bounties ?—*A.*—I have no experience of the shipping industry.

Q.—In your 6th paragraph you say, "In all cases in which the Government aid has been given, Government officers should audit accounts, and a Government Director should be on the Board till the business is firmly established." That is, you want the Government Director to vote or veto the thing ?—*A.*—Not veto the thing ; he will have his vote.

Q.—But still he is there to inform Government of what is happening ?—*A.*—Besides that, he is able to help with his knowledge.

Q.—In your 8th paragraph you distinctly say you are in favour of "nationalisation of industry." Can you give us any instance of an industry in any part of the world which is nationalised ?—*A.*—You may say that in Germany they are.

Q.—Railways only ?—*A.*—Yes ; when I am speaking of nationalisation of industry I am talking of industries connected with agriculture only, and, as such, I feel there is great room for promoting industries to deal with agricultural produce, such as sugarcane, cotton, and oil-seed industries.

Q.—Do you think private people cannot take advantage of that ?—*A.*—No. A great deal of education will be necessary before village people can start industries. You must begin by Government helping and pioneering such industries.

Q.—You have your Agricultural College here ?—*A.*—Yes, a very good college, doing very useful work.

Q.—You say, "There has been a good deal of complaint that Government did not help Indian-managed banks at the last crisis, and the complaint is not altogether without foundation." Will you give us an instance ?—*A.*—I have the People's Bank in my mind. The People's Bank was considered to be an absolute failure, and yet it has managed to pay as much as 12 annas per rupee, after paying very heavy charges for liquidation. A bank like that, if it was helped in the beginning, might have done well.

Q.—How could Government help ?—*A.*—By giving an advance.

Q.—On what ?—*A.*—Government paper and other securities, as other English-managed banks were helped.

Q.—In paragraph 12 you say, "What the village needs is a small power station equipped with a sugar factory capable of dealing with produce of 1,000 acres of sugarcane, an area which will generally be found under this crop among 8 or 10 villages." Do you think 1,000 acres are enough ? We have been told that at least you need 6,000 acres.—*A.*—That is a thing really deserving attention. In other parts of the world people start not only on 6,000 but twelve and fifteen thousand acres. Sugarcane plantations have their own factories. In India sugarcane is grown in patches and is not enough to feed a modern factory in a convenient area, therefore we need small factories. In the Punjab, something like 500,000 acres of cane is grown, yet the Punjab is supposed to be a Province not good for cane-growing. In Bengal only 75,000 acres are grown. For the United provinces I have not got the figures. The experts after careful enquiry hold that at least 50 per cent. of the produce is lost in the process of extraction and boiling. Here is an opportunity for the Government to come to the help of the villager and save him lakhs of rupees. You want a small factory to extract the full quantity of the juice and to save sugar by steam boiling which is now burnt in the open pans. The holdings are small and broken, and each man grows 2 or 3 acres of cane. We have to remedy the present conditions by starting small factories which will make crude sugar and send it to a central refining factory. The introduction of co-operative village factories will follow in the wake of model Government factories which ought to be started.

Q.—There must be small Indian factories for gur making ?—*A.*—You cannot call them factories. Gur is made locally in the villages. Fifty per cent. to 70 per cent. is, however, lost in extracting and boiling according to experts.

Q.—In connection with this question, I wish to know what your views are regarding Government acquiring land ?—*A.*—For setting up central sugar factories you might do it ; for small model factories you need no land, nor any improvement in cane. The cane is there, all you need is to deal with the produce in a scientific manner. It will increase the profits of the cultivator by 50 per cent., lessen his labour, lead to extension of cane cultivation and help in meeting the demand for sugar if extraction by a power three roller mill and boiling by steam is provided. It is no use trying to create central factories, what you need is to help the existing conditions, provide factories which will suit villagers. There is no great difficulty in doing it ; and it will help the entire sugar industry of India and lead to the success of a few central sugar factories.

Q.—Have you got any scheme in your mind; what would a small factory cost?—*A.*—There are two or three kinds of factories. One factory was started by Mr. Hulme, Agricultural Expert in Oudh, for making gur. That cost five or six thousand rupees, and the kind of factory I have in my mind would not cost more than twenty thousand rupees.

Q.—Will you give us a small review of the scheme you have in mind, by which the sugar industry can flourish in this country? On the Bombay side the people say that the industry can only be started if the land is acquired, say, five or seven thousand acres under the Land Acquisition Act by Government, so that they can get the proper amount of sugar they want. Do you think that would work as a hardship? All the cultivators would not be willing to sell their land?—*A.*—To acquire 5,000 acres is not very difficult, and is no hardship to the cultivators. According to what I have read, and I have gone into the question rather fully, they say you must have at least fifteen to twenty thousand acres to run a central factory properly. As you cannot provide concentrated cultivation in one place, you can avail yourself of the supply which is already available, and is being wasted by providing small factories, with a central factory to turn the crude article into refined sugar and to deal with by-products. Central factory can only prosper if it has a home farm to feed it. To make sugar from gur means working at a great loss. What would you think of a country where 50 per cent. of the produce is wasted in the process of extraction and of boiling?

Q.—What is the percentage of sucrose?—*A.*—I will give it to you in my written note.

Q.—Then you speak about cotton?—*A.*—Yes.

Q.—You have been trying to grow long staple cotton here?—*A.*—I got about 450 acres under 4-F. Cotton in my own farm. I have started direct steam-plough cultivation. It would help the sugar cultivation too, because you can have a big farm in one place.

Q.—What kind of seeds are fruitful here?—*A.*—4-F. American has done the best. Egyptian we have not tried. They tried it in Sind, but it did not do very well.

Q.—You say, "there is no reason why cotton weaving should not succeed in the Punjab, when Japan after buying cotton for the Punjab can still make profit." That is on account of the short staple of the cotton?—*A.*—We grow both.

Q.—Not good staple cotton?—*A.*—The American cotton is superior to your Broach cotton.

Q.—But there is very little cotton?—*A.*—The quantity this year is large, we have got a very big area under American cotton, about 10 lakhs of acres under Desi and American cotton. Next year, I think, American cotton will be grown on even a larger area as American cotton under adverse conditions has done better than Desi.

Q.—Then you say in the 14th paragraph, "To my mind, State-managed industries are not likely to compete with existing industries." By industries you mean new industries?—*A.*—Any industry that is started by the State and managed by the State would not compete for this reason because State management is generally more expensive.

Q.—But at the same time the raw material does not get cheaper?—*A.*—They will buy it in the open market.

Q.—What is the use of the State starting an industry when there is already private enterprise?—*A.*—In the presence of private enterprises there is no need, but take the Punjab where there is not a single industry.

Q.—You don't want the State to start an industry which is already in existence?—*A.*—No, but I want the State to pioneer an industry where none exists.

Q.—Don't you think that among the lower classes, and on a small scale, education ought to be given in the vernacular?—*A.*—Yes.

Q.—Is it being done here?—*A.*—Not in the Punjab.

Q.—Do you not think that is most essential?—*A.*—Yes, the greatest mistake that has been committed in the Punjab is to allow Punjabi language a grudging recognition. The Sikhs, who alone are for the Punjabi language, show a higher percentage of literates in the five years that are just over.

Q.—Have you any technical or agricultural books?—*A.*—I just started a system of agricultural books to be compiled in Patiala, but they were not finished. Another scheme was framed in Gwalior which is working fairly.

Q.—You think that in the case of the sons of cultivators, and men with very little means, if their children are to be educated, the education must be in the vernacular?—*A.*—**Yes, absolutely.**

Q.—You also want Government bulletins and other information to be in the vernacular ?—*A.*—Yes. The people who ought to make use of these bulletins issued by Government Departments never hear of them.

Q.—You are in favour of exhibitions ?—*A.*—Yes, partly.

Q.—And you want primary education to be compulsory ?—*A.*—Yes, that is the basis of everything.

Q.—Then you say in the 46th paragraph : "The old Indian system was based on apprenticeship, and I think even now for practical work it offers the best possible training." What was that old system ?—*A.*—Anyone who wanted to learn a trade was first apprenticed to a *Guru* or master, and worked with him and got the training.

Q.—Without any pay ?—*A.*—Yes.

Sir D. J. Data.—*Q.*—The stone-mason belonged to one caste, and likewise the goldsmith, and people of these castes always took up the profession belonging to their caste ?—*A.*—Generally speaking, but occasionally you will find outside men, who did not belong to the caste taking up professions.

Q.—But a goldsmith would always be a goldsmith ?—*A.*—That is true, but there is nothing to prevent a man, who was not a goldsmith, apprenticing himself to a goldsmith. There are some such instances.

Q.—A goldsmith would not teach his art to anyone who did not belong to his caste ?—*A.*—Possibly in ninety-nine cases, but there are always exceptions to the rule.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—In answer to Questions 57, 58, 59 and 60, you say : "The functions of the Board should be both advisory and executive." You want the Board to be also executive ?—*A.*—In what sense ?

Q.—In starting industries or in helping industries ?—*A.*—In both cases.

Q.—And that there should be a grant from which they can spend money ?—*A.*—Yes. Take a province like the Punjab, the Board should be able to start industries and direct them.

Q.—Should the Director of Industries be under the Board ?—*A.*—That is a question of detail.

Sir F. H. Stewart.—*Q.*—Supposing the Director and the Board differ, who is to have their way ?—*A.*—Like everything else, the majority must have its way.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—He should be an officer under the Board ?—*A.*—Not exactly. He would be an officer of the Board. He would be the executive head of the industries, carrying out the policy of the Board. Naturally if you have a Board of Industries, like a Board of Management, they have a Managing Director who carries out the work.

Q.—If they differ, the matter goes to a final authority ?—*A.*—The final authority would be the Board.

Q.—In paragraph 71(*a*)-72 you say : "I think for the present two central technological institutions will meet the needs of the whole of India." You only want two ?—*A.*—Yes, men have gone to England, Japan and other countries and got the training, come back and found no employment. The employment is available only for the few. The creation of a technological institute does not mean creation of industries. Where will the men who get training go ? To begin with, two institutions would be quite sufficient, and as the demand increases each province can have its own ; but for the time being, two will be quite enough.

Q.—Do boys go from the Punjab to the Technical Institute in Bombay ?—*A.*—Yes, some do.

Q.—Are there many from the Punjab in the electrical line ?—*A.*—Not a great many.

Q.—Do you think one at Bombay and one at Calcutta would do ? *A.*—I had in my mind Cawnpore, it is more central. There was a big scheme worked out for Cawnpore under Sir Harcourt Butler.

Q.—Then you say in paragraph 77 : "Foreign research scholarships should be started and enterprising individuals deputed to study conditions in other lands." As you were just saying, the results are not very satisfactory.—*A.*—I did not say they were not satisfactory. All I said was that employment was only available for a few men.

Q.—Do you think that the students are selected from the right quarter ?—*A.*—I was talking of students who go on their own.

Q.—But in regard to the Government scholars, is the selection all right ?—*A.*—I could not tell you ; I have no experience.

Q.—Do you think if they were given a chance by continuing the scholarship for another year, that that would give them some time to find a position where they would be employed ?—

A.—I could not tell you. The question of employment is a question of supply and demand. I have hopes that your Commission will accelerate industrial development and increase the demand for trained men. Foreign scholarships would therefore help. Businessmen, artisans and agriculturists who have knowledge and experience could be sent to study things in foreign countries. These men, after their studies, would be able to do very useful work; starting industries and introducing new methods.

Q.—In the 97th paragraph you say: "No attempt is made to start feeder railways which will be found more advantageous than money spent on metalled roads, etc." No private enterprise has taken up railways in this province?—*A.*—Not feeder railways. Rai Bahadur Ganga Ram had a scheme, and there was a Bill introduced by Government to levy some tax to start these railways but nothing has happened. Feeder railways in the Punjab will pay handsomely.

Q.—In the last paragraph you say: "I don't think jail industries compete with private industries."—*A.*—They never do.

Q.—Suppose jails started to use power, don't you think that would compete with private enterprise?—*A.*—I don't think so. There is no chance of the use of powers in jails. The jail population is not large, and jail industries are run not with the idea of competing but providing useful employment to jail inmates. This is the only way of helping prisoners to learn a profession which they can often take up in after-life.

Mr. C. E. Low.—*Q.*—With reference to your suggestion about small cane factories, what does cane sell for, per maund, in the Punjab?—*A.*—From 6 to 8 annas a maund; but it varies from year to year.

Q.—That is at present, in the present season?—*A.*—I could not tell you.

Q.—Evidence in Bihar went to show that, excepting in war time, they could not crush cane at a profit, to make it into sugar, if it sold for more than 4 or 5 annas.—*A.*—This is true. The difficulty with sugar factories is that the price of cane is so high, but if there is a co-operative factory, the profits from the sugar factory also will belong to the producer, and the price of cane will not interfere with the manufacture of sugar.

Q.—Has the Agricultural Department put up any crushing plant worked by power?—*A.*—I don't know of any in the Punjab.

Q.—With reference to what you said to Sir Fazulbhoy Currimbhoy about the Director of Industries being an officer working under the Board, how would that affect his position as a Government officer?—*A.*—This Advisory Board would be something like the Executive Council, and he would be one of the officers of the Executive Council.

Q.—I don't admit the analogy in the very least.—*A.*—I will call the Industrial Board an Executive Council, and as a member, he would enjoy the same privileges as the other members.

Q.—Are the members of the Board to be officials while they are members?—*A.*—Some of them will be officials and some non-officials; as members of the Board they will all be officials of the Board.

Q.—How many members would you propose having?—*A.*—That would depend upon the needs of the province; in some 6, in others 8, and in others 12. They would represent different interests.

Q.—Where would they live? Would they all live in Lahore, or in other places?—*A.*—It all depends on the amount of business that the Board does. If there is a great deal of business passing through the hands of the Board, the Board would have to settle down in Lahore; if the business is small, and their functions are merely advisory, they would meet on dates fixed at central places to be selected from time to time.

Q.—You say they would be like an Industrial Executive Council. The members of the ordinary Executive Council are whole-time Government officers. Would these gentlemen all be whole-time Government officers, or carry on their own business?—*A.*—That depends upon the nature of the work. If the work is enough to provide a whole-time appointment, there is no reason why they should not work whole time. If they have only to work for a day in the week, there is no reason why there should be a whole-time Board.

Q.—Assuming that they are not, do you think it would be easy to secure the attendance of men from outlying places?—*A.*—I hope so; I trust so.

Q.—In practice is the attendance of people from outlying places secured?—*A.*—Take the Board of Management of a bank; you will find that the Directors do not live in one place yet they manage to come for important meetings.

Q.—Do they live at considerable distances, representing different outlying parts of the province?—*A.*—Some do.

Q.—Do the Directors of the Board live say in places as far distant from Lahore as Multan ?—*A.*—I think so, but I cannot make a definite statement.

Q. Then take another appointment, that of the Director. It is rather a difficult post to fill ?—*A.*—It will be a difficult post no doubt.

Q.—Do you think it will make it any the easier to fill it, if you put the Director under the orders of the Board ? Do you think the ordinary man you are likely to engage would like to work under those conditions ?—*A.*—I am taking things from a purely business point of view. If the Board of Directors in banks or business concerns can find suitable men to work with them, I don't see why the Director of Industries should not be able to work with the Board. It is most important that the Director of Industries should not remain an outsider; he must be of the people, one of them, and not an "official" superior.

Q.—Directors of banks are rather different; they put their money into the bank; but in the case of this Director, the money would be that of the Government, and not of the members of the Board. Then presumably the managers of banks get paid on results, in addition to their salaries ?—*A.*—It is the best possible thing to give some share of the profits to the men who work. I said I did not believe in grants-in-aid, but I have no objection to subsidies and bounties. The whole thing hinges on the functions of the Board. Until you make clear the functions of the Board it is rather difficult to give a definite answer as to the position of the Board and the Director of Industries.

Hon'ble Mr. H J. Maynard—*Q.*—As regards this Board of Industries that you are thinking of, do you happen to know the constitution of the Sanitary Board in the Punjab ?—*A.*—No.

Q.—This is a Board which consists partly of officials and non-officials. The non-officials come in from distant parts. The Sanitary officer has only one vote. Is your idea of an Industrial Board a Board of that kind distributing either grants or subsidies, or whatever may be the form of assistance, meeting together, and in which the vote of the Director of Industries would be merged in so far as he is a member of the Board, but without affecting his executive authority ?—*A.* That is what I have in my mind: the Board of Industries will develop slowly in response to the call of new times.

Q.—That is a Board distributing grants or subsidies ?—*A.*—It will have dual functions as it were. The Director of Industries will be a member of the Board and will have his vote and at the same time will also be an executive officer.

Q.—About these sugarcane factories, I suppose in making your plans you consulted the agricultural experts in the Punjab. Did they not lead you to suppose that the peculiar climate of the Punjab seriously affects the quantity of sucrose, and really makes the plant a non-economic one in the Punjab ?—*A.*—That is the theory, the facts are against it. So far as I have come to know, the area under sugarcane in the Punjab is large and on the increase. You might give some credit to the grower, he is not likely to waste his time and labour on a crop that has no economic value.

Q.—Do you happen to know whether it is increasing or decreasing ?—*A.*—I don't think it has decreased. I have got five years' figures.

Q.—You did, I suppose, hear opinions recorded by agricultural experts that the frosts are not very favourable. Were you not told that the growth of sugarcane on a large scale must be south of Karnal in the Delhi Division ?—*A.*—The opinion was that the cane that was grown was not quite suitable and frosts affected it; the experts also said it was possible to find new varieties that would give as good results. No new varieties have yet been discovered. Gurdaspur they thought was the best cane-growing district at present.

Q.—About these light railways, possibly you were thinking of the plans that were made before the war by two firms for an extensive series of light railways all over the province ?—*A.*—I have not heard of these plans.

Sir D. J. Tata.—*Q.*—I don't quite follow your idea of the nationalisation of industries. What you say here seems to contradict the idea of nationalisation. For instance in one place you say, "Once research and demonstration have proved the success of an industry it will be naturally taken up by capitalists and thus automatically indicate where Government work should stop and private enterprise take its place." In other places you say something very similar. Do you contemplate that there should be no private enterprise altogether, and that all industries should be taken up by Government ? You say again: "To my mind State-managed industries are not likely to compete with existing industries. In the coming years there will be room for all," and so on in many places ?—*A.*—What I mean is this, that Government need not be shy of starting pioneer industries, and even when they have started them, they should carry them on to their utmost possible expansion.

Q.—And then hand them over to private enterprise ?—*A.*—If private enterprise takes them over, let them. My note is really in connection with agriculture. I would prefer agricultural industries to be nationalised in the sense in which co-operative industries in the

villages can be nationalised. These co-operative village factories would serve as feeders to large up-to-date factories which again might be under State management. I am not against private enterprise. The two can work side by side.

Q.—You have made some remarks about technical scholarships and careers for people who take advantage of these scholarships. What is the reason that young men, who are sent abroad to be trained, find no careers? Do you realise why it is that they don't find occupation straight off after their return?—*A.*—I have only two or three cases in mind. One or two men went for glass manufacturing, and on their return people expected them to start glass factories at once. You cannot expect boys who have just returned after getting a certain amount of training to take up the whole management of the glass industry. They did not succeed. I heard of another candidate who had been to Japan and qualified himself as a chemist; for a long time he was hunting for a professorship but could not get it. Another man went to Germany. He could not find a place till a private firm gave him employment and he is now making Thymol with great success.

Q.—When these young men applied for these scholarships, did they have any previous knowledge of these subjects?—*A.*—I don't know whether they enjoyed any scholarships at all. They went on their own.

Q.—But before going and spending money on these things, did they have any idea whether when they came back they would find an opening?—*A.*—Decidedly.

Q.—Then why did they find any difficulty in finding employment?—*A.*—Because, although there was such a talk about technical education in the air, there were really no industries in existence to give employment to trained men.

Q.—Take something for which there is no opening in this country. A young man says "in Japan they make these things." He goes and studies that, comes back and finds no demand for his services. Several witnesses have told us that when some of these young men apply for scholarships to go and train themselves, say as electrical engineers, and finding there is no opening, they want to be taught leather work next; and when there is no opening in that, pass on to something else. They don't go with any idea of trying to do something. Don't they ask for scholarships without any apparent definite object in view?—*A.*—I think a young man, when he takes a scholarship, really wants a career and does not wish to make his living by keeping the scholarship as long as he can. It may be in making his choice he is not wise, but that is all.

Q.—Scholarships should be given to men who have already worked in any particular industry; then if they have shown any aptitude, they may be sent to perfect their knowledge of that particular thing.—*A.*—That is a very good suggestion. You would take up a man who has worked 2 or 3 years but I am not for closing the door altogether to capable students who are anxious to go on with their training. I think the selection might be left to the discretion of the authority empowered to grant scholarships.

Q.—But when he comes back he finds absolutely no opening?—*A.*—That is the difficulty.

Q.—I believe some of the most successful were those who went in for cotton spinning. One or two scholarships were given to men who worked in cotton mills and showed aptitude for the work, who were then sent to Lancashire, and came back with a knowledge of their own trade, and were really useful.—*A.*—I quite agree with you.

Q.—Don't you think that the ideal way in which a man could qualify should be this; that those people alone should go to foreign countries for study, whose paternal trade it is. For instance, a rich agriculturist or a land-owner should send his son to Europe after he has been associated with him in his own work, so that he can come back and manage his own business. Is not that the right way?—*A.*—I am one with you in this but I don't believe in perpetuating caste.

Q.—Nothing is to be had without work?—*A.*—I agree with you, but there is a certain amount of mixing up going on, barriers are breaking and in the new times individuals should have the opportunity to choose and pick professions for which nature best fitted them.

Q.—These unfortunate people seek careers because they want to do something, but they don't find out whether there is any opening?—*A.*—We who are fortunate must help these unfortunate people. Take a Brahmin, for instance; he may like to do cotton spinning, why should not he get his chance.

Q.—Before doing so, would it not be much better for him to go into a cotton mill, and learn something of it, and then go. For instance, the first men who went to learn about glass-making had no opening, because there was no ready-made industry for them?—*A.*—Exactly, that is my opinion.

Q.—One man I heard of sent his son to Europe to study the gold-thread trade in which he worked. That was the right thing to do. Otherwise you have so many complaints,

as you point out, of men who go through a course of technical training and are expected to start industries when they have not studied the conditions from the factory point of view.—*A.*—Exactly.

Q.—You say labour in the Punjab is cheaper than in Bombay. You mean the wages are lower ?—*A.*—Yes, that is one thing, and I think our labour is not inefficient either.

Q.—In a cotton factory which would you consider cheaper, English or Indian labour ?—*A.*—Indian labour properly trained will be cheaper. It is every day increasing in efficiency.

Q.—Would you be surprised to hear that I consider that English labour is cheaper than Indian labour ?—*A.*—Yes, but I think our labour is not inefficient.

Q.—Not according to the work turned out. A short time ago an investigation was made with regard to the proportion which wages bore to cost of production per pound of yarn; and it was found to be less in England than it is in Bombay, simply because, practically, one labourer in England, though his wages are high, does the work of 3 in India. Consequently the proportion that wages bear to cost of production in England is less ?—*A.*—Men in England are turned into machines, while here they are not, but they are moving towards that ideal.

Q.—In that sense I don't see why you should say labour is cheaper in the Punjab than in Bombay. Wages are lower here perhaps ?—*A.*—We have not proved that it is inefficient.

Q.—When you talk about religious education, do you mean moral ?—*A.*—I don't disassociate morals from religion.

Q.—Consider the number of religions that exist in India. Who is to give the religious education, and in what religion ? In a big public school there would be about 20 different sects. Are they all to be instructed in those particular religions ?—*A.*—Religious education is possible everywhere specially in villages.

Q.—Even in villages, there might be Muhammadans, Sikhs, Budhists, etc. ?—*A.*—If we go back to the education that a Parsee, Muhammadan or Hindu got in the old days, we have a good model to follow. Each community had its own *Maktab* or *Pathshalla,* under a Maulvi or Guru who was respected. The morals of the school did not differ from that of the family. The ideals of life and labour which he inherited still guided him. Are you going to do away with them entirely in your new schools, and deprive the labourer of what has sustained him through ages ?

Q.—Is it a practical suggestion ? How could you give religious education ?—*A.*—Yes. We must create a moral atmosphere in the schools, and the teacher should not confine himself entirely to secular education and provide separate denominational schools.

Q.—Who is going to pay for this ? Should the various religions pay ?—*A.*—They are paying already; all you need is to provide religious teaching for various denominations and denominational schools.

Q.—In answer to Question 102, you say, "A hydro-electric power survey in the Punjab will reveal the immense power that now runs to waste; even the canal falls have not been harnessed." Do you propose that a survey should be made ?—*A.*—Yes.

Q.—And then what should be done ? All the power created at once ?—*A.*—As it is required. When you have got a survey made and the schemes properly made you can take each scheme in turn as the industries spring up, and the demand grows.

Q.—Schemes should be worked out and people told that it is possible to store 5,000 H. P. A man then comes along and says : "I should like to make use of this power," and then it is given ?—*A.*—Yes.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Can you tell us anything about cottage industries ?—*A.*—A certain amount of weaving goes on in the villages.

Q.—Can you suggest anything about cottage industries ?—*A.*—I have really nothing more to say about cottage industries than the introduction of improved looms and co-operative working.

ADDITIONAL WRITTEN EVIDENCE—(*Submitted after oral examination.*)

The position of Sugar Manufacture in India and the Punjab.

India has been growing sugarcane from time immemorial. It used to produce enough sugar for its own needs. It now imports sugar like other articles which were manufactured in India before. The reason is that while other countries have sought the assistance of science and discovered more efficient methods of manufacture we have stuck to the old primitive methods which are now entirely out of date and extremely wasteful. The hand-loom is supposed to be capable of competing with power loom and the two roller crusher mill equal in efficiency to the multiple roller steam-driven crushing mill and vacuum pans. In advanced countries it is now held that the day of small manufacturing concerns is gone, in India

the day of even small joint stock concerns has not come. We are impractical not only in the sphere of politics but even in matters of industry and trade. In other countries, Governments have helped co-operation and fostered infant industries on efficient lines thus accelerating the pace. Here we shall not be surprised if the report of the Industrial Commission when it is issued wanders from office to office and is subjected to various opinions of the Secretariat and its main recommendations lost in a maze of words.

The day of hand-loom and small manufactures is over. What would you think of a man who expects a bullock cart to keep pace with a motor-car? I must not, however, digress. I must come back to the cultivation of sugarcane. The peasant puts only an acre or so under cane because even his small plot of sugarcane taxes him to his fullest capability. It is a crop which pays him best, and he would love to have a larger area under it, but with his sugar mill and his pair of weary bullocks, and all the time and labour of his family, it takes him nearly two months to crush his solitary acre. Leave him to grow the cane, manufacture sugar for him and he will treble the area under sugarcane. It is in the manufacture that he fails and loses almost all the profits of his crop in spite of continuous work night and day. When the bullocks get weary and refuse to go, the peasant with a light heart slackens off the rollers wholly unconscious that in doing this he is leaving a great deal of juice unpressed. When the crop is poor and the cane fibrous he loses something like 50 per cent. of the juice. In modern sugar factories cane passes through many rollers and even the refuse is steeped in hot water and then pressed again. How can the poor cultivator compete with these power-driven crushing mills and scientific methods of manufacture. Sugar-making is a science in itself. The following figures compiled by Mr. Sayer, Assistant to the Agricultural Adviser to the Government of India, speak for themselves of grossly inefficient methods which obtain in India in the recovery of sugar from cane. The figures have been worked on the assumption that cane is available at Rs. 7 per ton, a working price in North India :—

Process.	Tons of cane to a ton of sugar.	Cost of cane per ton of sugar.	Net manufacturing expenses.	Total net cost per ton of sugar.
Khandsari	27·3	191	70	261
Hadi	20·2	141	56	197
Gur refining	17·4	122	60	182
Small vacuum pan	15·0	105	89	194
Modern factory (crushing 300 tons of cane per day of the type).	13·8	95	55	150

When the crop is poor with low sucrose content and also low purity as much as 16 tons of cane are required for a ton of sugar. But when good quality crop is obtained as the result of a favourable season about 12 tons of cane are required. By the Indian method the Khandsari or the maker of sugar recovers from 27·3 tons of cane only 1 ton of sugar. The modern factory from the same quantity of cane recovers over 2 tons of sugar. The cost per ton of sugar according to the old methods runs up to Rs. 261 a ton while according to the new it is reduced to Rs. 150 a ton; that is to say, the producer for every 27 tons of sugarcane loses Rs. 111. Could anything be more wasteful?

It is evident from the figures given above that sugar can be manufactured at a sufficiently low cost in India to compete with foreign sugar if up-to-date factories are set up under proper conditions. The Pilibhit Factory and some other sugar factories in Bihar have been running successfully even before the war. It is not the production of cane that fails, but the tremendous wastage in the making of sugar which ruins the industry. If the cultivator could be helped at the manufacturing stage, the extension of sugarcane cultivation would follow and India will no more import sugar. Writes Mr. Sayer "The cultivator works hard for periods varying from ten to eighteen months, sinks a lot of capital (having regard to his means), raises a successful crop with the limitations under which he has to work, *e.g.*, imperfect implements, inadequate supply of manure, etc., and yet because he does not know or because he has no means, he fails to recover even a decent average amount of sugar from his crop, in fact reduces the possible output by 35 to 50 per cent., and suffers in consequence. Could we but teach him that he wastes 20 per cent. of the sucrose when crushing his cane by a bullock-driven mill and that all told a loss of nearly 35 per cent. to 50 per cent. occurs in the whole process from the time the cane is cut to the complete manufacture of raw sugar, he would soon realize why it is that cane cultivation does not pay him as it ought to."

"With the ordinary three-roller mill driven by bullocks in the case of a cane having 8 per cent. fibre and a total possible juice production of 89 per 100 of a cane, the cultivator will extract even under the most favourable circumstances only 74·9 per cent. of juice, while a Krajewski cane crusher and a three-roller mill with maceration will extract 86·9 per cent. of juice. Just imagine what country or what industry could or would stand a waste of 20 per cent. or more occurring in a single operation, which is but a link in the whole chain of process of manufacture, if it had any competition to meet."

The whole matter has been left to the good sense of the cultivator and private enterprise. They have failed to combine and start manufacturing on up-to-date methods. The few large sugar factories which were started are compelled to purchase cane at a price which reduces their margin of profit and even then enough cane is not available to feed them. According to experts a large factory requires at least 5,000 tons of cane within a radius of 4 miles. It has not been possible for private factories to make this provision. There has been some talk of acquiring large blocks of land and placing modern factories in the heart of sugar plantations. This is, no doubt, an ideal method if a sufficiently large number of factories and plantations could be established, but there does not seem any likelihood of such a large undertaking on the part of the Government and in a large country like India one or two factories will hardly make any difference as to the output of sugar as the areas thus acquired will be limited, while the waste from millions of acres of cane grown all over the country will continue.

The other method is to take stock of the present conditions of produce and to help the producer just where he fails, that is in the extraction of the juice and the making of sugar. I will now take up the position of sugar manufacture in the Punjab. The late Mr. Barnes was of opinion that in Gurdaspur nearly one-half (varying from 34 per cent. to 57 per cent.) of the sucrose in cane is lost in the simple operation of melting and boiling. The juice is boiled in open pans direct over the fire and result is that sugar which would otherwise crystallize is inverted into caramel. And the gur that is made again is very unsuitable for making sugar. When the fibre content of cane is 15, the best three-roller bullock mill will only extract 53 per cent. juice, while with the Krajewski cane-crusher and three-roller mills with maceration the extraction runs as high as 75·5 per cent. out of a possible 80. That is to say where the fibre content is high the cultivator stands to *lose much more with his present methods of crushing than in the case of canes with a low fibre content. It means in the Punjab the cultivator* is losing at least 30 per cent. of his crop by inefficient crushing. To this must be added another 20 per cent. in the process of manufacture which means the loss of almost half the crop. Would not the position of sugar in the Punjab be different if the profits from cane were increased by 30 per cent. by providing power crushing and another 20 per cent. by steam boiling. It is strange that while looking out for new crops we cannot help the cultivator to recover fully what he already produces. It is argued that the climate of the Punjab is unsuitable and that the yields are poor and it is no use worrying about the position of sugar in the Punjab. But the cultivator is no fool, he finds it paying better than other crop even with a loss which runs up to 50 per cent. in manufacture. If this 50 per cent. was secured for the producer, the area under sugarcane will increase greatly. The area under sugarcane in the Punjab, so far as I am aware, is only smaller than that of the United Provinces and has not been decreasing. The war has proved the possibility of making many things possible which were held as impossible and the manufacture of sugar comes easily within the range of possible things. Through good times and bad times, sugarcane has held its own, as the best-paying crop in spite of the great losses in manufacture. If we wait for the time when more paying crops will drive out sugarcane from the province we may have to wait to the end of the time.

On the other hand if we turn our attention to the conditions of manufacture and help the cultivator at the manufacturing stage it will mean an increase of 50 per cent. from the profits of sugarcane cultivation for the peasant immediately, without any improvement in the quality of the cane. The solution appears to me to be simple. All that is necessary is the establishment of a few demonstration factories. It will be more advantageous, if these factories are run by private individuals rather than by the Government. The villager is rather suspicious of the figures and facts of the Government-run farms. He pleads that he cannot emulate Government with its unlimited resources. But if a man from the villages runs a farm or a factory with success the news goes round and becomes the topic of conversation in the villages. It excites both the jealousy and the ambition of the villagers who are stimulated to action. A small beginning can be made by encouraging a few individuals to start power crushing and steam boiling of the juice. In steam evaporation a large heating surface is provided and the losses due to inversion proportionately reduced. Steam heating is also more efficient than open fire heating. In modern sugar factories heat is economized by the use of multiple effect evaporators and vacuum pans. The Government can purchase a few crushing and steam boiling plants and hire them out. The plant can be made portable with a traction engine and a wagon which can go from village to village. In the beginning only *gur* should be made. The power crushing will add at least 30 per cent. in the Punjab to the output of *gur* by more efficient extraction of the juice. Under steam evaporation the increase in the glucose ratio is not as great and hence better quality *gur* is produced to

the great advantage of the refiner. From every 100 maunds of *gur* as prepared by the country method a refiner is lucky to get 55 maunds of sugar whereas from the same quantity of *gur* evaporated by steam he will be able to recover 10 to 15 per cent. more.

A traction engine with a good crushing mill could easily serve five villages growing 200 acres of cane each. These small crushing and boiling factories will come to the aid of the farmer just where he fails. The cultivator is not wedded to the present methods, he abandoned the old wooden cane-crusher as soon as he found the ordinary two-roller mill more efficient. He will take to the new mill as soon as he finds it brings him better profit. In fact I am confident that as soon as a few plants are successfully established the villagers will combine and start these factories for themselves and thus learn co-operation on which the whole future of Indian agriculture depends. A start has to be made. Either the cultivators should combine and work a *gur* factory—which does not seem within the range of possibility at present—or the State should show the cultivator how best the crushing can be done by putting up efficient installations charging reasonable rates for crushing and manufacture of *gur*, and thereby conclusively proving (by the only method possible) to the cultivator that these modern methods of crushing and boiling are very profitable. I am confident that if small factories work successfully they will lead to the establishment of large refineries all over the country. Before the war we used to import about 500,000 tons of white sugar (16 D. S. and above) per year. There can be no doubt as to the wide scope for sugar manufacture in India.

The Government may help individuals or co-operative associations in the beginning to start small crushing and boiling factories in sugar-growing areas and establish one large sugar refining factory in each province to deal with the crude produce. I am not formulating unworkable proposals. Messrs. Begg Sutherland and Company of Cawnpore have built up a big sugar manufacturing business in United Provinces. They have small factories in some of the cane-growing districts where cane is crushed and juice boiled to required density and sent to the central factory at Cawnpore, where the crude article is turned into refined sugar and by-products also made to yield and add to the profit. At present we import 61 lakhs of rupees worth of molasses, the by-product of sugar. To those who know how many industries in the world now carry on solely by the successful utilization of by-products and careful economizing at all points it is heart-rending to see the waste that is going on in this particular industry in India. I am so sure of the success of sugar manufacture in the Punjab that I am going into the business myself. I am in negotiation with the Punjab Government for acquisition by purchase at market price of an area near my own. The only concession I am looking for is the postponement of payment during the period of laying out the farm and the factory. I have hopes that when my scheme works, it will lead to the villages combining to start similar factories of their own which will inevitably lead to the establishment of many large central sugar factories in the Punjab. The establishment of power stations in the villages will be beneficial in other directions such as cotton ginning, oil manufacture, etc., in the villages. A writer in the "Times of India" calculates the money value of the loss to the country by the waste of cotton seed at Rs. 13,15,00,000 and the producer loses at least 20 per cent. in marketing his seed cotton.

"In statistics giving the cost of production at three typical Java mills the Director of Agriculture, Bombay, shows the profits on a share capital of 9 lakhs to be 45 per cent. and the cost of sugar production is given as follows :—

	Per ton of white sugar. Rs.
9·65 tons of cane at Rs. 4·10 required to produce 1 ton of sugar	39·56
Cost of manufacture	30·84
Cost of interest on capital borrowed for cane and sugar production, commission, marketing and taxation ...	47·21
Total ...	117·61

Sale price Rs. 169·27 per ton of sugar.

Net profit Rs. 51·66 per ton of sugar.

"Calculating in a similar manner using figures which apply to conditions prevailing in the Bombay Deccan, taking 10 tons of cane to produce 1 ton of sugar, the price of cane at Rs. 10 per ton, the cost of manufacture at Rs. 40 per ton of sugar, and interest on capital

borrowed, etc., at Rs. 50 per ton of sugar, the cost of sugar production works out as follows :—

	Per ton of white sugar.
	Rs.
10 tons of cane at Rs. 10 required to produce 1 ton of sugar	100·0
Cost of manufacture	40·0
Cost of interest for capital borrowed for cane and sugar production, commission, marketing and taxation ...	50·0
Total ...	190·0

Sale price say Rs. 400 per ton of sugar.

Net profit Rs. 210 per ton of sugar.

" Previous to the war, Mauritius, which is an Island in the Indian Ocean of only 795 square miles area but on which there exist 80 sugar factories turning out 200,000 tons of sugar annually, exported the bulk of this sugar into Bombay while all the cane cultivation and sugar factories on the Island are worked by Indian labour.

" But it should be noted that the estimated net cost of cane production in the field, without cutting and carting charges, comes to Rs. 4 to Rs. 15·3 per ton in Java which is not lower than in certain parts of Bihar and Gorakhpur. This is because the cost of manuring cane is Rs. 25 per acre in Java and also because the rents there run considerably higher than in the United Provinces. The wastage in cane-crushing and *gur*-making as carried on by cultivators is enormous and if this loss is prevented and a slight increase in the yield of cane per acre brought about, India will be more than independent of foreign sugar. It must also be borne in mind that the taste for sugar is growing as the annually expanding imports of sugar before the outbreak of war showed."

To sum up the most urgent reform needed is on the manufacturing side—

(*a*) To demonstrate the advantages of power extraction whereby the maximum quantity of juice is expressed by crushing the cane several times in succession through many rollers.

(*b*) To help the establishment of power stations in groups of villages to crush and boil cane and deal with other agricultural produce.

(*c*) To establish central factories to deal with the crude village produce and also to manufacture direct from the juice. The direct process is most interesting : " The juice as it leaves the mill is at once limed to neutralise acidity and so prevent the formation of molasses, bleached by the application of sulphurous acid gas in order to obtain white sugar, clarified, filtered and evaporated and boiled into sugar under a vacuum in order to prevent the formation of molasses. It is then spun in the centrifugal machines in order to remove the molasses and the maximum quantity of sugar is turned out ready for the market. The molasses from this sugar is reboiled to make a second quality and even a third quality of sugar is produced. The cane refuse or crushed cane is utilised for generating the steam required to run the factory in specially constructed boiler furnaces in factories designed for the most economical working, no other fuel being necessary."

d) The establishment of power stations can be helped by grant of bounties in the villages and by encouraging enterprising individuals to go ahead with their scheme. " A list of places where cane cultivation occupies in any single year about 3,000 acres within a radius of five miles or at such distance as can be commanded within 48 hours of harvesting should be prepared for the guidance of those who wish to set up central sugar factories capable of crushing at least 300 tons of cane a day."

If we organise sugar industry in the Punjab it will pour annually into the lap of the peasants lakhs of rupees and make the cultivator responsive to new ideas and able to help himself.

In preparing this note I am greatly indebted to Mr. Wynne Sayer's article in the October number of the Agricultural Journal of India and the Imperial Trade number of the " Times of India."

WITNESS No. 364.

RAI BAHADUR MOHAN LAL, *Proprietor of the firm of Rai Sahib M. Gulab Singh & Sons, Lahore.*

WRITTEN EVIDENCE.

Capital.

The question of industrial development is pre-eminently a question of capital. Other things such as technical and general education are undoubtedly necessary, but capital is the first essential, because it is only when the requisite capital has been found that the question of utilising the products of education can arise in a practical manner. The Commission has, therefore, rightly given the first place in its list of questions to those relating to the difficulties of raising capital. Capital in India is admittedly shy, as compared with western countries as well as Japan, and if India is to be an industrially developed country in the modern sense this shyness has to be overcome. The best, perhaps the only, way in which this shyness can be overcome is by helping to float a number of successful enterprises to serve as a sort of object-lesson to intending investors. It is here that Government aid appears to me to be all-important. My suggestion is that every Provincial Government should lay aside every year a sum of, say, rupees five lakhs to help the cause of industrial development. This amount should be lent to approved companies or individuals starting a new and promising industry or seeking to resuscitate an old one, which is languishing for want of help, on cheap rates of interest for such periods as may be deemed necessary and on such securities as they can legitimately be expected to furnish. If the Government will do this for, say, 20 years then at the end of that period it will not perhaps be necessary to make any fresh advances, in the first place, because private enterprise will by that time have learned to stand on its own legs, and, secondly, because such help as industries might still require could then be afforded from out of the interest or profit accruing from the amount already advanced by Government.

Government assistance.

Of other forms of Government aid, I am in favour of the supply of machinery and plant on the hire-purchase system, the provision of part of share capital of companies on the same basis as public subscriptions of capital, as well as guaranteed or preferential Government purchase of products. On this last point I would add that where the products are cheap and of sufficiently good quality, there is no reason why the patronage of Government should not be continued even when it has ceased to be absolutely necessary. The search for an ideal perfection in quality is neither necessary nor practically helpful. I would only premise that the patronage should be extended on a basis of perfect impartiality. In all cases of direct financial and other aids to industries the Government should, in my opinion, have some control over the concerns, but the best method of exercising this control would be by means of an independent audit. The only cases in which the Government would be justified in being represented on the Board of Directors are those in which it would provide a part of the share capital. I am also of opinion that all new industries should for a period of five years be exempt from all taxes.

Pioneering industries.

As regards the pioneering of industries, it seems to me that there is justification for it only in those cases where the Government have reason to believe that the shyness of private capital would not be overcome even by financial aid in any of the above forms. In such cases the factories should be handed over to private individuals or companies as soon as these appear in the field with reasonable chances of success.

Official organization.

That the amount annually budgeted by Government for giving help to industries may be properly distributed and utilized and its industrial policy generally may be properly carried out, I think it essential that there should be a Board of industries. The Board might consist of an equal number of officials and non-official businessmen. It should have specified executive powers, and should elect its own chairman who might be designated the Director of Industries for the Province. It should be in sole charge of the distribution of the funds budgeted for industries within the limits of its powers, and outside those powers should be a sort of advisory body to Government. The Government should not usually interfere with it, so far as its own proper functions are concerned, except for the purpose of seeing that its general policy is carried out.

Banking facilities.

Besides affording direct financial aid to industries, there is another direction in which the Government can help them financially. One formidable difficulty, which industrialists at present experience in the matter of raising capital for industrial purposes, is the reluctance of European-managed banks, including the Presidency Banks, to help Indian enterprise. I have myself experienced this difficulty. So far as the ordinary European-managed banks are concerned, the Government is, of course, powerless, but as regards the presidency banks it ought to be able to do something. In my opinion it should insist upon these banks treating Indian and European enterprise on a footing of perfect equality as a condition precedent to placing its surplus at their disposal, and it should be

represented on the directorate of the banks to see that this policy is properly and adequately carried out. The time has also come when the question of having a separate Provincial bank for the Punjab should be seriously taken up. The Bengal Bank is entirely outside the control or even the sphere of influence of the Punjab Government. The consequence is that even in cases where the Government are of opinion that an industry deserves help, it has often to go without any financial assistance from the bank.

Limitations to Government aid.

Far from thinking that there should be any limitation on Government aid to a new enterprise if it competes with an established foreign trade, I am of opinion that it is exactly in such cases that Government aid is most essential. The question of protective tariff is outside the scope of the Commission's enquiry. Otherwise I might point out that a certain amount of protection, at least for a limited period, is absolutely essential if India is to compete successfully with other countries, most of which protect their own industries by a rigid tariff wall. England is perhaps the only free trade country with which India has to deal on a large scale, and both on this account and also because of the intimate and indissoluble political ties that bind the two countries I am in favour of a system of mutual preferential tariff as between India and England, but in all other cases there is room for rigid and systematic protection for as long a time as protection may be necessary.

Technical aid to industries.

On the subject of technical aid to industries, my idea is that while the Government might have a suitable and adequate staff of experts, whose services might be lent to private industries on condition that besides paying for those services at a reasonably moderate rate, the factories or concerns in question should accept for training a number of apprentices recommended by Government or specified public bodies, the industries should be encouraged as far as possible to depend upon their own experts. Here I may parenthetically add that in awarding scholarships for industrial training in foreign countries the Government should consult at least a couple of non-official businessmen in every province before the industries are finally selected. I may add that I am in favour of the establishment of at least one technological college and one college of commerce in the country. When these are established, the need both for the Government entertaining a staff of experts as well as for private capitalists and companies obtaining their experts from abroad will be largely obviated.

Land policy.

As regards the land policy of the Government, I am strongly of opinion that the Pre-emption Act and similar other measures should be so modified as to remove all restrictions that at present exist in the way of individuals or classes purchasing or obtaining land, even when they require it for industrial purposes. These Acts, to my mind, were conceived in the interests of agriculturists, though it is contended by my community that it has operated unfairly against itself even from this point of view. Now that the Punjab wishes to become an industrial as well as an agricultural province a modification of the law is clearly essential.

Education of labour.

Lastly I am in favour of a wide diffusion of elementary education. It is universal experience that the average literate labourer is more intelligent and more efficient than the average illiterate labourer, and since in the long run the success of industries depends to no small extent upon the efficiency of all its labourers, both skilled and unskilled, it is obvious that this question of the diffusion of education has a very important bearing on the question of industrial development. For this reason I welcome the movement in favour of the making of elementary education compulsory, because it is only by making it compulsory that education can be made universal.

In conclusion, I would beg leave to point out that by helping the cause of industrial development the Government would not only be helping the country to stand on its own legs economically, but would also be helping itself materially. The discontented graduate and under-graduate is a serious problem not only economically but politically, and the best and the only natural solution of this problem is to provide industrial openings for a large proportion of the products of education.

Oral Evidence, 7th December 1917.

Sir F. H. Stewart.—*Q.*—You were listening to the evidence which the Sirdar Sahib was giving ?—*A.*—Yes.

Q.—You heard the question which he was asked about the proposed constitution of the Board of Industries ?—*A.*—Yes.

Q.—And the position with regard to it of the Director of Industries ?—*A.*—Yes.

Q.—You think that the Board should elect its own chairman ?—*A.*—Yes.

Q.—Do you think that would work ?—*A.*—I think the Director of Industries may be made chairman.

Q.—You say in your statement that he should be elected by the Board ?—*A.*—I have changed my opinion. I think that the Director of Industries may be made the chairman of the Advisory Board.

Q.—How many members do you think you would have on the Board ?—*A.*—At least two officials and two non-officials.

Q.—You would have it a small number ?—*A.*—Yes.

Q.—And do you think it would help if you gave the members of the Board power to appoint special committees or to co-opt other gentlemen for special purposes ?—*A.*—Yes.

Q.—One suggestion we had about it is that such a Board would not be likely to devote sufficient attention to helping cottage industries ?—*A.*—They can employ persons or take the help of men who can spare the time and who may possess the requisite knowledge.

Q.—And you suggest that this Board should have budgeted funds. You suggest that five lakhs should be put aside. A considerable sum ?—*A.*—Five lakhs or whatever is convenient.

Q.—Would that be at the disposal of the Board without further reference to Government ?—*A.*—That should be at the disposal of the Board.

Q.—Without further reference to Government ?—*A.*—Yes.

Q.—You would not introduce some safeguard, that reference should be made to Government if they wanted to spend more than a certain sum on a particular project ?—*A.*—The Board should be the final authority.

Q.—You think that will be safe ?—*A.*—Yes.

Q.—What will be the powers of the Director ?—*A.*—He would carry out the orders of the Board.

Q.—He would really be a servant of the Board so far as his relations with the Board went ?—*A.*—Yes.

Q.—He will be the head of the department ?—*A.*—He will be head of the department, but the final authority will rest with the Board.

Q.—And do you think that on those terms you will get a good man to take up the appointment of Director of Industries in a province ?—*A.*—If the selection is made of a good person who really understands his business, there will be no harm.

Q.—But do you think that you can get such a good man ?—*A.*—I think we can get such a man.

Q.—You would be able to find a sufficiently experienced and capable man who would accept a subordinate position and who would have so many masters to serve ?—*A.*—I think the Board should have the final authority.

Q.—You say that industries should be exempt from all taxes for a period of five years.—*A.*—To encourage them.

Q.—Simply to encourage people to go in for new industries whether they be good or bad ?—*A.*—The Board will select capable men. Why should they select a bad industry ? I do not think there is much risk.

Q.—Supposing they were profitable from the outset, would you still exempt them from tax ?—*A.*—When they are proved to be profitable they may cease to be exempt.

Q.—Then you say that the time is come when there should be a separate provincial bank for the Punjab. For what banking pruposes ?—*A.*—Mostly industrial and other banking purposes.

Q.—You do not think that Government should take any particular part in st ting that bank ?—*A.*—Government should help. It should see that a bank on proper lines is started because without its help it is not possible. The last crisis has taught the lesson that without Government help it could not be started.

Q.—Supposing that Government were to place a certain amount of funds with such a bank and there was another crisis and the Government money was lost, would that not be a very serious blow to Government prestige ?—*A.*—I think that if the people know

that the Government is associated with this bank they will trust it. Before the war the Government was paying 3½ per cent., the European banks were paying 4 per cent. and the Indian banks were paying 6 per cent.

Q.—Do you mean that if it was known that Government was behind such and such a bank there would not be a run upon it ?—*A.*—Yes.

Q.—There would not be withdrawals in times of crisis ? There was a rush on the Post Office Savings banks, was there not ?—*A.*—Those were small depositors, and there was a rush. They could draw at 24 hours' notice or a week's notice. I do not think that such a chance would come.

Q.—With reference to land policy you say " To remove all the restrictions that at present exist in the way....." Would you not like to put in some safeguards ?—*A.*—If it is to the satisfaction of the Collector that it is really required for any industry.

Q.—Do you think that it is necessary that the individual or company should prove that it is in the public interests that such an industry should be started ?—*A.*—So I say. If in the opinion of the Collector of the district this industry is a useful thing.

Q.—But useful to the public. Not useful to the individual only or the company ?—*A.*—The industry will be useful to the man who starts it or the firm.

Q.—In your last sentence you say that industrial development will furnish a solution of many difficult problems of to-day. Do you think that a large proportion of the young men of this province are willing to turn to industries ?—*A.*—There are many M.A.'s and the Government cannot employ such a large number every year.

Q.—Do you think that the young man realises that and that he is becoming daily more willing to turn to industrial and commercial employments ?—*A.*—I think so.

Q.—That is your experience in this province ?—*A.*—My opinion is that it will be more beneficial to the young men, and they will like industries. When people go to bazaar they see that ninety per cent. of the goods come from Japan which can easily be made here.

Q.—You think that the young man of to-day is willing to take off his coat and work in a shop ?—*A.*—Some educated men may feel shy as to working in an industrial concern, but they may not enter a literary profession if they find beforehand that there is some industrial opening where they can make Rs. 300 a month instead of passing a big degree examination and getting Rs. 100.

Sir D. J. Tata.—*Q.*—You say " The only solution of this problem is to provide industrial openings for a large proportion of the products of education." How are these openings to be provided ? Is the Government to provide them, and how ?—*A.*—By helping industries.

Q.—If Government promoted industries and helped industries somehow or other, these failed B. A.'s would find openings. Is that what you mean ?—*A.*—Some of them. There will be some people who will take up the technical part and some the office part.

Q.—You mean that instead of going in for literary education and getting their degrees in arts they will try and qualify themselves for technical employments ?—*A.*—Yes.

Q.—You do not propose that simply because they failed to pass a certain examination or they succeeded in passing a certain examination Government should find occupations for them in some way in industrial concerns ?—*A.*—No. There is my son whom I am not training for service or literary profession. I learnt business from my father and I teach it to my son.

Q.—That is a very good thing. You do not think that a good literary education is useful in business ?—*A.*—You mean higher education ?

Q.—A good literary education in arts, is that not useful in any walk of life ?—*A.*—For many purposes it may be useful, but elementary education will be more useful for all trades.

Q.—You know that in Europe many a man, whether he is a business man or a public man, has gone through a public school and university education, and he is all the better qualified for carrying on his work in life, whatever it may be. Why should the B.A. or the M.A. seek for service under Government or something of that kind ? Why cannot he after graduating take up some trade or industry afterwards ?—*A.*—Because there is not much opening. That is the reason why we ask for help.

Q.—He cannot find openings himself ?—*A.*—He may be the son of a pauper and he may not have enough to eat. At present it is very evident that it is only the man whom

you call the son of a pauper who takes advantage of education facilities, but the rich people never do. Is that so or not ?—*A.*—It is their mistake. They should also train their sons for suitable purposes.

Q.—That is the trouble in this country.—*A.*—I know that some rich people do not help. The Advisory Board should contain capable and successful business-men.

Q. With reference to the reluctance of European-managed banks including the Presidency banks to help Indian industrial enterprise, have you yourself experienced this difficulty ? We have heard this all over the country. What is your experience and would you mind telling us that ?—*A.*—The Lahore Electric Supply Company was started before the crisis and it was helped by the People's Bank and after it went into liquidation we tried to get money from the English banks. They were not sympathetic.

Q.—Why ?—*A.*—Perhaps—I cannot say.

Q.—They did not know enough about you ?—*A.*—That is one thing. We laid the balance sheets before them. On the personal security of the directors we have been able to secure money and run the show well. Within three years we have paid up that debt and we have got nearly two lakhs cash in the bank. It was only necessary for two years.

Q.—You complain that the European-managed banks do not assist Indian firms. Is it not due to a sort of want of confidence through ignorance or through want of knowledge of the people they are dealing with ? They would naturally deal only with people they knew something of. Their Indian constituents they know very little about, and secondly as they are responsible for the management and the prosperity of the concern they manage, they would naturally only advance money to those about whom they knew something. They only know casually the average Indian who goes to seek help, and consequently they do not know how far he is a man to be relied on. You know that in your part of the country there have been many bank failures recently. What was the cause of these failures ? Was it not advancing money to people who ought not to have money advanced to them ?—*A.*—That is not the only thing. They might have made the mistake in one or two cases, but really they could not continue the show and there was no one to help them.

Q.—There is evidence before us here to show that in many of these banks monies were advanced to the directors' own friends or relations for purposes which were not carefully examined, and for industrial and commercial projects which were really not worth starting ?—*A.*—There might be one or two mistakes. I have no knowledge of them.

Q.—Don't you think that under those circumstances the European-managed banks were perfectly right in refusing to support things about which they knew nothing ?—*A.*—Not in all cases. Because they had no Indians on the management who could advise them. There might be a man who could be trusted to the extent of two lakhs by the European bank, but an Indian bank would trust him with twenty lakhs because the management would know what was his property and what industry he was engaged in, who was in charge of the management of it, and so on.

Q.—The gist of your complaint is that these banks do not have any Indian directors who know something about Indians ?—*A.*—Yes.

Q.—It was not simply prejudice on their part ?—*A.*—It is a mistake. It is misjudgment.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—May I know what is the business of your firm ?—*A.*—Printing and publishing.

Q.—Is it your own private firm ?—*A.*—Yes.

Q.—Have you been a director in any local banks here ?—*A.*—No.

Q.—In answer to the President's question you said that you did not think that the people in the Punjab would be able to start industries without Government help ?—*A.*—The help of Government is essential because capitalists are shy. They have no experience as to where they should invest their money.

Q.—Do you not think that the capital is shy because the banks have failed ?—*A.*—Capital is generally shy.

Q.—That is all over the world, and not in this country only.—*A.*—In other countries they have more experience.

Q.—Always at the beginning capital is shy. In Bombay we had many failures, but afterwards confidence revived. If Government does not directly help the industries you are afraid the people will not be able to start any industry ?—*A.*—People are ready to start industries with big capital, and if they know that the Government is helping an industry they will gladly invest.

Q. The Government should take up some safe industry and put their money in it. The people do not want to trouble themselves to find out what is good and what is bad ?—*A.* Some of them are ready to co-operate.

Q.—Why not initiate ?—*A.*—All of them are not experienced.

Q.—Some of them ?—*A.*—Some of them are ready.

Q.—And they are starting ?—*A.*—Yes.

Q.—What have they started ?—*A.*—They have started flour mills, ginning presses.

Q.—What is the chief industry here for which you want Government help ?—*A.*—Match factory, mining industry.

Q.—Do you think that a match factory could be successfully started ?—*A.*—I think so.

Q.—Do you get all the raw materials here ?—*A.*—I think pine wood is available in the hills near Lahore.

Q.—Do you know that wood forms a very small portion of the whole thing ?—*A.*—I am not an expert in the matter. An enquiry may be made into the existence of sulphur, paper and other things. Copper, iron, paper-making, spinning and weaving all these things can be easily started.

Q.—Many of these industries have been started all over the country. If the people here are anxious they can go from here and find out which is paying.—*A.*—Some of them understand the benefit of industry, but most of them do not.

Q.—Coming to the last para. of your note you say that many colleges have been started and graduates have been produced who are unemployed. You say also that you are in favour of one technical college and one college of commerce in the country. Do you think that one technical college and a college of commerce are enough for the country ? We have got in Bombay our own technical college and college of commerce and half the student candidates could not get admission into them.—*A.*—You are right, but I say at least one.

Q.—Do you think one will suffice. Don't you think that your province needs a technical college and a college of commerce ?—*A.*—Our province needs a college.

Q.—Are there any arts colleges started by private enterprise ?—*A.*—Yes.

Q.—People have given money for arts colleges ?—*A.*—Yes.

Q.—Do you think that they will also give money for a technical college and a college of commerce as the Bombay people have done ?—*A.*—Some of them will give.

Q.—If you start these first you will get your boys educated in these too ?—*A.*—Yes.

Q.—Coming to the Board of Industries you say that you have changed your mind and you think that the Director of Industries should be the Chairman ?—*A.*—Yes.

Q.—Suppose the Board passes any resolution the Chairman must carry it out ?—*A.*—Yes. Otherwise what is the use of the Board ?

Q.—And four members should be there ?—*A.*—At least four.

Q.—Half of them should be officials and the remaining half non-officials ?—*A.*—Yes.

Q.—That is, three will always be on one side, the two officials and the executive officer of the Board on the other side ?—*A.*—I thought that the Director of Industries would be one of the two officials.

Q.—And you give him a casting vote ?—*A.*—Yes.

Q.—It comes to the same thing ?—*A.*—We should not always expect bad things.

Q.—I am just leading you to another point. When you think that the official side would always have the majority, don't you think that in preference to that you may have an Advisory Board to the Director of Industries, and if they differ the matter may be referred to Government and the Government should decide the difference ? Do you think that this would be preferable ?—*A.*—In case there is equal voting.

Q.—If they differ. In Bombay and Bengal the people have stated that there should not be half officials, but the majority must consist of men elected by the different

chambers of commerce or nominated, and also a few officers who are experts. If the Board differed from the executive officer then the matter might be referred to the Government who should decide it. Which system do you prefer ?—*A.*—We should not start with the idea that there will be difficulties.

Q.—Which is better ? Is it not better to trust the Government ?—*A.*—Then it may be referred to Government.

Q.—In answer to Sir Dorabji Tata you said that one of your concerns got money from private people and the concern went on without the help of other banks. You also said that the Presidency Banks and the European banks did not assist. You say, "One formidable difficulty, which industrialists at present experience in the matter of raising capital for industrial purposes is the reluctance of European-managed banks, including the Presidency Banks, to help Indian enterprise. I have experienced this difficulty." Have you got private assistance ?—*A.*—Private Indian banks helped me.

Q.—And the European banks, though knowing you, refused loan or did not entertain your proposal ?—*A.*—They were not sympathetic.

Q.—Do you think that if a local Presidency Bank is started for your province they will know the people and they will be better able to assist them ?—*A.*—Yes, if a selection is made of people with local knowledge also.

Q.—Then the people will get more facilities ?—*A.*—Yes.

Mr. C. E. Low.—*Q.*—You think that elementary education should be made compulsory, What would you do in the case of children employed in factories or other industries ?—*A.*—Evening classes will help people who are serving in factories.

Q.—You would have compulsory evening classes for the children employed in the factories ?—*A.*—Yes.

Q.—Have evening classes for people employed in factories ever been a success in this country ? Has it not been found that the strain was too great and they are unable to attend them ?—*A.*—That will be one hour or two hours, and the law does not permit boys to work more than seven hours.

Q.—Do you think that a boy will be able to work seven hours and then go to the night class ?—*A.*—I do not think it is a large strain on them.

Q.—Night classes for factory or other employees have not been tried in this province ?—*A.*—In some cases they have been tried.

Q.—Have you any experience of them ? Have you seen any of them ?—*A.*—I have not gone personally to those places, but I have heard that there are some evening classes in Lahore for children.

Q.—Not only in factories, but for any kind of children ?—*A.*—Yes.

Hon'ble Mr. H. J. Maynard.—*Q.*—What proportion of your business is Government custom ?—*A.*—It is a very large proportion.

Q.—Supposing that Government is in a position to give to a particular firm the amount of custom similar to that which it gives to you, that is sufficient help ?—*A.*—This help which I have asked for industry is.....

Q.—I am asking you about your own particular case. I want to bring out the fact that your view that Government help is necessary is not really impeached by the fact that you yourself have been successful without Government help, because Government help has been given to you in the form of Government custom ?—*A.*—That help is quite enough, provided there is proper competition.

Q.—In your particular case it is very largely the Government custom which supports your business ?—*A.*—Yes. In one instance I find that the Jail industry conflicts with private enterprise.

Q.—Does it ?—*A.*—Yes. The jail people are allowed to charge the departments Rs. 5 for a thing which private enterprise can turn out for one rupee. It is not at all economical to the Government.

Q.—Is not printing in the jail entirely on a lower plan, quite an inferior kind of printing which does not compete with you ?—*A.*—They are doing inferior things at four times the cost. The same class of work, or even better work, can be done outside for one rupee, but the departments are paying five times more to the jail simply to show a false profit. They should be allowed to charge only the market price.

Q.—Your inference would be that the jail should only be allowed to charge the market price.—*A.*—Yes.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Is there a steam press in the jails?—*A.*—Yes. They are allowed to charge four or five times more than private enterprise.

Q.—You do not want power industry to be worked in the jail and compete with you?—*A.*—No.

Sir D. J. Tata.—*Q.*—In your paragraph about technical aid to industries you say that where the Government expert's help is given to any industry that industry should be asked to take in apprentices. Have you ever asked for any Government expert advice for your business?—*A.*—I have always imported experts myself from England.

Q.—Are you taking any apprentices yourself and training them in your business?—*A.*—When I need ten men I employ twelve.

Q.—Have you regular apprentices of your own?—*A.*—Yes.

Q.—Do you enter into an agreement with your apprentices, that they should serve you for a certain time?—*A.*—The labour is so cheap that I do not feel the necessity for anything of that kind.

Q.—You do not apprentice them, but simply employ them and train them?—*A.*—Yes.

Q.—About the awarding of scholarships—the scholarships are awarded for study in subjects whether there is an opening or not. Should they not be selected in such a way that when the students come back they should be able to find an opening?—*A.*—Yes. There are thirty-nine British paper-makers in India and there is only one Indian of Lahore who is a paper-maker. Instead of one there would have been 20 or 30 if these scholarships had been given for paper-making 10 or 20 years ago.

Q.—Then you think that when scholarships are to be given, they should be given only for such industries for which there are openings and they should not be given for industries for which there are no openings?—*A.*—Not only that, but if there is a businessman on the committee of selection he will give better advice.

WITNESS No. 365. *Major E. L. Ward.*

MAJOR E. L. WARD, I.M.S., *Inspector-General of Prisons, Punjab.*

WRITTEN EVIDENCE.

Other forms of Government action and organisation.

THE question of jail industries has more than once within the last thirty years engaged the serious attention of the State authorities, with special reference to their bearing and effect on the growth and development of private enterprise, and with the express object of regulating them, so as to minimise, to the lowest possible extent, competition with the latter. Jail competition.

The orders on the subject are quoted in the margin and I cannot do better than to refer the Commission to them, as they contain a full and exhaustive discussion of all the important and relevant points bearing on the subject.

Government of India's Resolution No. 70—1406-19, dated the 22nd September 1882.
Government of India's Resolution No. 10—605-18, dated the 7th May 1886.
Government of India's letter No. 155, dated the 10th August 1906, page 191.
Government of India's letter No. 145-54, dated the 29th April 1912.

I agree entirely with the conclusion arrived at therein, and can suggest nothing new by which the object aimed at can be better attained. So long as these orders are carried out, and I have no doubt that they are, there is, I consider, no fear absolutely of private business being injuriously effected. During my whole experience as a jail officer in the Punjab Jails I know of no case of a jail industry which has been carried on on such a scale as to seriously interfere with, or cause the closing down of, any similar private industry. On the other hand, I do know of one large industry at least (carpet-making), now being carried on profitably as a private concern, which owes its origin and success to the Lahore Central Jail, from where most of its trained employees were obtained, and which concern has since ruined the carpet industry in our jails; and possibly for all I know there may be a number of other petty businesses similarly set up in private by men after leaving jail. Our industries are not organized and regulated in any spirit of rivalry, but with the object mainly of employing our many thousands of prisoners on meeting, first, our own departmental needs and thereafter the requirements of the other consuming departments of Government, an action which is fully recognised by all the responsible

authorities, as being the correct and proper one to take. A certain amount of competition there will always be, so long as productive labour is a necessary requirement of prison administration, but, as I have already stated, it is so little, comparatively, and as the rights and interests of private traders are sufficiently protected, under the existing rules, I can offer no suggestions of any practicable value to assist the Commission in dealing with the matters now before it, with special reference to jail industries.

ORAL EVIDENCE, 8TH DECEMBER 1917.

Sir F. H. Stewart.—*Q.*—You confine your note to industries in jails, what are the jail industries here?—*A.*—In the Punjab our main industries are lithographic printing in the Lahore Central Jail Press, and the making of a very cheap form of paper for Government offices.

Q.—Are there any such jail industries elsewhere in the province?—*A.*—Those are the principal jail industries throughout the province; paper-making is carried on in all the jails, excepting the Central Jails, where we have certain other industries, such as chick-making, durry-making and tent-making.

Q.—Have you had any complaints of interference with private enterprise?—*A.*—No, we have not heard of any in recent years.

Q.—You mention in your note two Resolutions of the Government of India on the subject, could you just summarise them very shortly?—*A.*—In the first one, that is the Government of India Resolution of 1882, the Government of India were anxious that nothing should be done to interfere with local enterprise and they issued very strong orders on the subject. One order was that there was to be no steam printing in any jail and in those jails in which such existed it was at once to be done away with. They realised that the labour in jails should be productive, but it should not be over-productive. There was then the Government of India Resolution of 1886 which was founded on the Secretary of State's reply. The Secretary of State was not in agreement with the Government of India at that time and said that if these orders were observed they would lead to an absolute suppression of the whole system of jail labour. The Secretary of State further ruled that while jail labour should as far as possible not interfere with local enterprise, it should be renumerative without being over-remunerative. At the same time it was realised that the population of our jail departments was also increasing and that labour must be found. Then in 1906, that is 20 years later, the whole matter was revised because, apparently, there had been a great deal of trouble from outside. As a result of this there was another Resolution again pointing out that there should be no interference; the principle was more definitely laid down. In 1909, in this province, when Sir Louis Dane was Lieutenant-Governor, he found that the cost of the upkeep of our jails, as the result of these Resolutions, was great, and the earnings scarcely anything at all in comparison with other provinces. All Government departments were accordingly ordered to obtain such articles as chicks, durries, &c., from jails. I should say that these industries had already been duly selected so as not to interfere with the local markets as far as possible. It was further ordered that all these things should in future be supplied by the Punjab jails, if possible, without option to the officers. Of course, that led to a certain amount of trouble from officers; they were not willing to comply, and were largely influenced by their subordinate staffs not to do so. We had a great deal of trouble in that way, and eventually Sir Louis Dane insisted on the orders being given full effect to Then finally in 1914 there was another campaign in this province to enquire again into matters, when it was definitely laid down that with regard to the printing press in the Lahore Central Jail only lithographic standard forms should be printed. The printing of books and manuals was prohibited. The result of the various orders is that excepting for Government offices, we supply, practically, nothing to the outside public, and excepting for Government, we do not interfere with the local market at all.

Q.—Do you still manufacture carpets, for instance?—*A.*—That is an industry which we had absolutely in our hands at one time. In the year 1887 there was a certain firm not very far from here which the Lieutenant-Governor of that time allowed to visit the Lahore Central Jail, for the purpose of learningt he carpet-weaving industry. This firm was allowed not only to see how the work was carried on but to obtain jail patterns. Thus an industry which had been kept alive by the Jail Department in India, and which had been built up by the, Jail Departments, was absolutely ruined. In the Lahore Jail the looms are practically all lying idle.

Q.—Is there any interference with private enterprise on the part of the Jail Department as buyers of raw material such as wool and so on?—*A.*—No. We have never had any

complaint with regard to wool. I have been in the Jail Department for 16 years now, and the carpet industry has been practically dead all that time. The only wool work that we are doing is for our own requirements, and of course at the present time we make blankets for the Army ; but that is rather a different matter because the Army requires these articles from all sources.

Q.—Is paper-making a local industry in the Punjab ?—*A.*—The class of paper that we make is of a very cheap kind ; formerly, before this war, there was a great idea of stopping it altogether, because officers complained that it was of an inferior quality, and more expensive than the ordinary *badami* paper.

Q.—You have been supplying papier mâché ?—*A.*—Yes.

Q.—Then your considered opinion is that there is really no ground for complaint, and that you really have no complaints ?—*A.*—I am absolutely of that opinion.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Yesterday a gentleman who has just got a Government contract was complaining that the jail paper printing industry was competing with his work ?—*A.*—I think one can easily answer that. In the first place it is a question of labour with us. We only want to see that labour is sufficiently supplied to our prisoners. In the second place the printing press in the Lahore Central Jail has had very great difficulties to contend with because of outside interference. As a matter of fact it is only a lithographic press and the forms that we print are simply standard forms for Government Departments, and within the last three or four years we have had to undertake lithographic printing for the Director of Land Records. The Director of Land Records formerly made his own arrangements with private presses, but when the prison population swelled from 15,000 to 21,000 and the question of labour became very acute, we had to make every effort to provide labour for these prisoners; but even then only standard forms were allowed to be lithographed. In regard to anything else in the way of manuals or books of any kind, we supply nothing to private persons, and there are strict orders not to comply. So what we do is purely for Government departments.

Q.—Do you use steam power in the printing press ?—*A.*—In that one jail only, in the lithographic press.

Sir D. J. Tata.—*Q.*—Is there any system of industrial education in the jails ?—*A.*—Yes.

Q.—Would you mind just describing it ?—*A.*—That is particularly so in the Borstal Jail. We have got about a thousand boys there now, and we train them in carpentry and agriculture, and everything leading up to tent-making. We teach them all the different branches in connection with tent-making, that is to say, fringe-making, rope-making, tailoring, dyeing, etc., etc.

Q.—Then there is a regular school to train these boys ?—*A.*—There is a regular school.

Q.—Is there any elementary school besides ?—*A.*—Yes.

(Here the witness said that he would be glad to show the Commission what they were doing exactly, especially what work they were d ing in the printing press.)

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Have you got reformatories ?—*A.*—I have nothing to do with reformatories. We had one in this province, it is now in the Delhi province,.

Q.—Do the younger boys also go to the jails ?—*A.*—Yes, we send boys convicted for more than four months to the Borstal Jail.

Q.—Is there any separate jail for juvenile offenders ?—*A.*—Every jail has its own small juvenile ward.

Q.—In the jail compound ?—*A.*—There is a small juvenile ward in every jail. But nowadays juveniles sentenced for over 4 months are at once sent to the Lahore Borstal Jail from all over the Province.

Q.—Do any large proportion of the released prisoners take up honest work ?—*A.* Things are improving. Unfortunately, we have not any very definite records because it has been difficult in this province to start anything in the nature of a Prisoners' Aid Society, but we are hoping for great things very soon from the Act which has recently been drafted and which is now under consideration in connection with the Borstal Jail. These boys will no longer be treated as prisoners. Their sentences will be of detention only, and it will be an "institution" instead of a jail. With that we shall have a committee formed for finding employment on their release. As a matter of fact I can get employment for them under the agricultural officers and others.

Q.—Is there not a great prejudice amongst employers against these boys ?—*A.*—No. I think there will be an increase in their employment. In fact, we have got a great demand for those boys who have been trained in the different branches of tent-making. No boy really knows the whole of tent-making but the incidental industries which lead to the same are so valuable for instructional purposes.

Hon'ble Mr. H. J. Maynard.—*Q.*—The Borstal Jail is providing labour for the Dhariwal Woollen Factory, is it not so ?—*A.*—Yes.

Sir F. H. Stewart.—*Q.*—Is there anything else which you would like to say ?—*A.*—There is only one thing I should like to say. I do not think it can be said that the Lahore Lithographic Printing Press is in any way interfering with local firms. When the question of the printing for the Director of Land Records arose in 1914, it was decided by Government that all departments should get their standard forms and lithographic forms from us. We do not interfere with other forms of printing.

Mr. H. T. Conville.

WITNESS No. 366.

MR. H. T. CONVILLE, *Zamindar, Montgomery.*

WRITTEN EVIDENCE.

I desire to give evidence on—

(1) The agricultural industry, and

(2) The cotton-ginning and pressing industry only.

Agricultural industry.

Agriculture being the most important industry in the Punjab, Government is not likely to find a more profitable way of spending money than by encouraging it and providing more scientific workers and practical men to solve the many questions in cultivation, introduction of implements, rotation of crops, watering and the handling of the produce advantageously, in order to obtain the best market prices.

The cultivator is not unwilling to change his traditional methods of cultivation in favour of new ones, provided he has the advice of experts and has the opportunity of seeing experiments and practical demonstrations at convenient centres carried out by Government, which he cannot afford to do, that he is assisted in every possible manner by Government subordinate officials, Zaildars and Lambardars in the execution of their duties, so that he does not spend more time and labour than is actually necessary and compensated for in carrying out their orders, and that the local co-operative societies help him financially so that he may not be forced into the hands of the *Bania* for his financial requirements at exhorbitant rates of interest.

This could be brought about by Government increasing the number of experts in the Department of Agriculture and Industry and by spending more money on experimental work, so that each district would have suitable experts, with the necessary subordinate staffs for controlling the work in each district.

The increasing of the Agricultural Departmental staff will mean increased expenditure on the part of Government, and create a demand for trained men. So far as the men are concerned the various districts might be manned gradually in accordance with the men available and as regards the increased expenditure Government will be compensated by increased revenue, when outturn and qualities are improved and better prices obtained.

Cotton-ginning factories and presses.

A considerable amount of capital has been raised and machinery purchased for this industry, but in my opinion fully three-fourths of that capital has been handled to the detriment of capitalists and the cotton industry.

There are more ginning factories and presses erected than are really necessary for the amount of cotton available, with the result that there is a large amount of capital locked up, good machinery lying idle and inefficient handling of the industry.

For instance, in the Multan and Muzaffargarh Districts alone, there are 41 ginning factories and 8 presses, representing the capital outlay of about 20 to 25 lakhs rupees, whereas for the amount of cotton available there is only a necessity for 8 ginning factories and 4 presses, which is proved by the conditions prevailing there.

These surplus factories and presses have only been erected for the purpose of sharing in a pool, which is established in those districts.

The amount of cotton (kapas) available in those districts amounts to about 3 to 4 lakhs maunds, which means the outturn of about one lakh to one lakh thirty thousand maunds of ginned cotton.

This amount of cotton will be profitably and advantageously ginned by 8 ginning factories and pressed by 4 presses, yet there are 33 surplus factories and 4 surplus presses in those districts, simply because they and the working factories share in a pool of about one lakh of rupees annually, *i.e.*, a profit of little more than 2,500 rupees for each factory, and a pool of about 80,000 rupees for the presses, *i.e.*, that profit of a little over 10,000 rupees for each press.

Without the surplus factories or presses, the factories would earn about Rs. 12,000 or more each and the presses about Rs. 20,000 or more each.

The pool system for the factories is that each working factory pays into a pool Re. 1 per maund on every maund of cotton ginned and buys kapas at the market rate current. In this manner one lakh of rupees is collected in the pool when one lakh maunds of cotton is ginned in the district.

The amount in the pool is then distributed among the 41 factories, in proportion to the number of gins in each factory, each gin being entitled to one and half pies per gin in the factory.

Similarly, the pool system for the presses is, that each working press pays Rs. 2-4-0 on every bale of cotton or wool pressed into a common pool and when 25,000 bales of cotton and about 10,000 bales of wool are pressed, about Rs. 80,000 is collected in the pool for distribution among the 8 presses, which amount they divide equally.

For the sake of this distribution, there are a matter of about 10 lakhs worth of ginning machinery and about 3 to 4 lakhs worth of pressing machinery lying idle in those districts alone.

This pooling system is established in the Multan District and in a few other districts and it enables the idle factory or press to receive some income, but in the districts where no pooling exists, there is no income whatever for the idle factories and presses.

The only way of helping the capitalists to stop this unnecessary locking up of capital and keeping machinery idle is for Government to limit the number of factories and presses in every district, so as to work efficiently the amount of cotton available.

One ginning factory of about 40 gins should be allowed for every 50,000 maunds of kapas available for ginning and one press for every 10,000 or 12,000 bales available for pressing.

I am of opinion that no financial aid is necessary on the part of Government, but what is really necessary is Government advisory control over all industrial concerns.

I am also of opinion that Government should establish ginning factories at suitable centres for the special ginning of long staple cotton, not only by way of demonstration, but in the interests of the industry itself ; such factories could be handed over to private capitalists or companies, when Government was satisfied that the system of ginning had been established and that the industry itself would in no way suffer.

ORAL EVIDENCE—8TH DECEMBER 1917.

Mr. C. E. Low.—*Q.*—What area have you in your own cultivation ?—*A.*—3,000 acres.

Q.—What crops do you mostly grow ?—*A.*—I grow cotton and wheat principally, and also sugarcane, oilseeds and gram.

Q.—What cotton do you grow ?—*A.*—American cotton purely, the long staple 4 F.

Q.—Have you your own gin ?—*A.*—No.

Q.—You get it ginned by the ordinary ginneries ?—*A.*—I have a gin under my supervision.

Q.—Is there much trouble owing to the mixing of cotton in gins ?—*A.*—Yes.

Q.—And have you heard of the idea of licensing gins not for the purpose you mention in your note but in order to prevent mixtures ?—*A.*—Yes.

Q.—What do you think of that idea ?—*A.*—I agree with it.

Q.—But for the purpose you mention in order to prevent too many gins being started you propose that there should be some licensing system ?—*A.*—That is to prevent unnecessary expenditure and outlay of capital.

Q.—There are more gins than there is cotton to be ginned ?—*A.*—Yes.

Q.—Supposing you have in your tract enough cotton for a dozen gins, and supposing the amount of cotton grown increases and there is enough cotton to serve twenty gins, there is room for eight more gins. Supposing twelve more people wanted to start, which of them would you allow ?—*A.*—Those that would be working in the interests of the industry and that are really reliable and approved.

Q.—Would that not rather confine the profits to existing gins ?—*A.*—I do not quite follow.

Q.—You say that you propose to give preference to those people who have already a knowledge of the ginning industry ?—*A.*—Yes.

Q.—That would rather confine it to people who were concerned in gins already and probably the people who were concerned in gins in the tract in question ? If there are just enough gins to deal with the existing cotton the gin owners may combine for another reason, not to put down the number of gins working, but to simply keep up the rates charged for ginning to the disadvantage of the cultivator. I will give you an instance from Berar. Messrs. Ballis decided that they would not associate themselves with any pool, but work their gins irrespectively of what anybody else did, because they said that it was not their business to make money out of ginning, but they wanted ginned cotton to come on to the market as cheap as possible in the interests of cotton trade and their own trade ?—*A.*—I understand from what you mean that people who combine to fix the ginning rate also combine to fix the rate of purchase of that *kapas*.

Q.—You get a certain number of gins who purchase from cultivators and you have also a certain number which gin for custom for merchants. Is that the case here ?—*A.*—Not all over the Punjab, but in some factories in the Punjab.

Q.—Usually the gin people purchase cotton ?—*A.*—They purchase cotton and sell ginned cotton.

Q.—They probably press ?—*A.*—They press. But there are customers who are ginners in the Punjab who lease their gins to exporters.

Q.—For a month at the time ?—*A.*—Yes, and they charge a certain rate for the cotton to be ginned.

Q.—Before coming back to that point again, is there any regular more or less accepted prevailing rate for ginning ?—*A.*—More or less.

Q.—What is it ?—*A.*—In some districts it is ten annas and others eleven annas a maund of 80 lbs.

Q.—That rate prevails when you have too many gins. Supposing you had fewer gins would not the rate for ginning tend to go up ?—*A.*—Not necessarily, because the factory has got to have a certain amount of work to feed it to keep it going, and if it charged a fabulous rate it would naturally not draw cotton to be ginned at that factory.

Q.—But they have shown themselves already capable of combining to make a pool in which a certain number of gins do not work. What they would have in mind no doubt is this:—If they did not combine they would compete and thus the rate for ginning would go down to a low figure and the price paid for cotton would go to a high figure. That is why they combine ?—*A.*—No. They combine because the nearest and the easiest method of getting money with the minimum of capital is this.

Q.—Surely the object of the pool is to prevent the rate paid for ginning going too low or the price paid for cotton going too high?—*A.*—Where there are Indian industries and ginneries there have been pools formed. I know of individual ginners competing with one another regardless of the money they have invested. I have known ginners losing Rs. 10,000 and Rs. 20,000 a year rather than give in to the other competitor.

Q.—They cannot do that beyond a certain point. When there is a pool I take it the individual members agree among one another to do or to abstain from doing a certain thing. That is embodied in an agreement ?—*A.*—Yes.

Q.—Supposing one fellow breaks the agreement, then the combine put him into court ?—*A.*—Yes.

Q.—If that combine consists of say five gins each of which has got five partners, then there is a recent ruling in another part of India that that combine should be registered as a company under the Companies Act. Is the combine registered as a company ?—*A.*—No.

Q.—Would the various partners of the different gins if you add them up in the combine—would they come to more than, say, ten persons ?—*A.*—It goes up to even 30.

Q.—The matter has not gone to court ?—*A.*—Not to that extent.

Q.—How do you deal with your sugarcane ?—*A.*—I merely extract gur by the ordinary roller.

Q.—Do you use power or cattle ?—*A.*—Cattle.

Q.—Don't you find that it makes a very big demand on the working strength of your cattle at certain seasons of the year ?—*A.*—Not by the system which I have got.

Q.—You work it continuously day and night ?—*A.*—No.

Q.—What area have you got under cane ?—*A.*—About forty acres.

Q.—What kind of cane are you growing—the local kind ?—*A.*—Yes.

Q.—Do any of your neighbours also grow cane ?—*A.*—Yes.

Q.—Supposing you had a small power-crushing plant, do you think that your neighbours would be ready to bring their cane to you and have it crushed ?—*A.*—I do not think so. The holding under the cane is small.

Q.— What area does each cultivator grow ?—*A.*—One acre. But you never know when it may be stopped. Personally, I do not think it is paying.

Q.—Why stopped ?—*A.*—Owing to water rate. Compared with other crops it does not pay us.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—What is the system in the Punjab ? Do the cultivators themselves bring the *kapas* to the market or do they sell in advance to the *Banias* and *Sowcars*?—*A.*—The *Bania* has got in hand certain cultivators in the village. He advances them money and he practically fixes the rate.

Q.—On his own choice ?—*A.*—On the so-called market rate which is, in my opinion, not correct. It is only a nominal rate.

Q.—He advances money as soon as *kapas* arrives ?—*A.*—When the *kapas* is ready to be marketed.

Q.—Really speaking, the poor cultivator gets nothing. It is the middleman who earns the whole profit ?—*A.*—Yes. The cultivator is at their mercy entirely.

Q.—All the profits made in the Punjab go to the middlemen ?—*A.*—So far as the smaller cultivators are concerned.

Q.—Are there big cultivators here ?—*A.*—Yes.

Q.—Are you also having *kapas* ?—*A.*—I include myself among the larger cultivators.

Q.—About the ginning factories, you think that only the reliable and approved people should be allowed to have factories ?—*A.*—Yes.

Q.—Don't you think that it would lead to preferments ? Approved by whom ? You mean approved by Government ?—*A.*—Approved by Government experts who are capable of judging the same.

Q.—If it were to be approved there might be some chance of preference being given ? —*A.*—Yes.

Q.—Are the ginning and pressing factories in the hands of the middlemen who take hold of the *kapas* ?—*A.*—No. They sell to the ginnery.

Q.—Don't you think that if there are more ginneries there will be more competition and the *kapas* can get better rate and the ginning rate will be less?—*A.*—I do not think so, because it is only a question of each factory working for quantity regardless of quality.

Q.—You say, "Without the surplus factories or presses, the factories would earn about Rs. 12,000 or more each and the presses about Rs. 20,000 or more each." Don't you think that they will have to work 9 or 10 or 12 months in the year to

finish the whole crop if you want to restrict the factories to a smaller number?—*A.*—That is what they are doing at present. In the districts referred to there are 41 ginning factories. Eight of them work and the remainder are closed down. There is no work for them. The factories work during the cotton season.

Q.—Can you tell us what is the average earning on the pressing and ginning: 5 per cent or 6 per cent?—*A.*—According to this pool system they earn about 3 per cent.

Q.—Are they still having the pool or are some independent?—*A.*—You have got to differentiate between the speculator and the man who is dependent on pool distribution. The man who depends upon pool distribution goes on contented. The speculator in cotton makes Rs. 10,000.

Q.—What foreigners have got ginning factories here? Ralli's and others?—*A.*—They have leased factories and I think they have just bought one as well.

Q.—In the second paragraph of your written evidence you speak about the co-operative societies. Are not these co-operative societies able to finance these poor people who are going into the hands of middlemen?—*A.*—They have done a considerable amount of good since their formation.

Q.—Have they got banks to finance them? Are there any big banks?—*A.*—The co-operative banks under the system on which the Government is working them are gradually asserting themselves.

Q.—You think there ought to be more staff under the Government for this work?—*A.*—Yes.

Q.—Have you been cultivating staple cotton?—*A.*—I cultivate purely staple cotton.

Q.—Where do you sell it? Do you send it down to big centres like Karachi?—*A.*—I sell it at my godown to exporters.

Sir F. H. Stewart.—*Q.*—Are you a tenant of Government?—*A.*—Yes.

Q.—You say that you would like to see the Department of Agriculture and Industries strengthened and more experts in it?—*A.*—Yes.

Q.—If they were separated, would that set free the agricultural experts to devote more time to agriculture?—*A.*—It would enable the agricultural experts to devote more time to agriculture.

Q.—I do not quite understand about this pool system. Who starts these pools? Do the proprietors of the different ginning factories get together and start a pool?—*A.*—If there are 5 or 6 ginneries erected in a town or district and they compete with one another regardless of the profits to themselves, they endeavour to call a meeting to bring about a combination. No single factory owner would go over to the other factory to bring about this combination, but they would go to an agency run by Europeans to bring about a meeting and decide to have a pool.

Q.—How much capital is required roughly to start one of these ginneries?—*A.*—In pre-war days it used to be Rs. 1,000 per gin and a factory with 20 gins would cost Rs. 20,000.

Q.—And they should have some kind of working capital?—*A.*—Yes. It is necessary at the time of the cotton season when cotton is required. A good business-man may be able to manipulate the requirements of his factory with another Rs. 20,000. So on the whole it would be about Rs. 50,000.

Q.—Cannot these ginneries, which are already in existence, keep others out?—*A.*—I do not think they could. The other factories that are started simply go out and buy 5,000 maunds or 2,000 maunds and start the business and there is a certain amount of commotion in the locality. They would rather lose than combine with you.

Q.—And you think the remedy is a system of licensing by which the Government should not allow more than a certain number of gins in a certain district?—*A.*—Yes.

Q.—With the increased production of cotton is there any likelihood of the demand for gins overtaking the present number? Are there far too many gins and is there no question of more being required?—*A.*—No likelihood.

Q.—It seems to me that the man who starts a new ginning factory in a place where there are plenty runs a considerable risk of losing all his money.—*A.*—More or less. That is speculation and the man takes his chance.

Mr. C. E. Low.—*Q.*—You sell your staple cotton to export firms ?—*A.*—Yes.

Q.—Are you satisfied with the price you get ?—*A.*—No.

Q.—Have you made enquiries as to what the corresponding rate would be in a free market like Bombay or Ahmedabad ?—*A.*—Yes.

Q.—And you do not consider that you are getting an equivalent treatment ?—*A.*—No.

Q.—Did you apply to the Agricultural Department or anybody else for help in the matter ?—*A.*—I think the Agricultural Department have done more than they can possibly be expected to do under the conditions in which they are endeavouring to market the produce. When you have only three buyers the price is low because there is no other buyer to pay a higher price. I do not think the Agricultural Department can do possibly more than that they are doing.

Q.—You have not, any of you, attempted to combine and ship direct to Bombay ?—*A.*—No. As a business-man myself I have taken the opportunity of trying in the Bombay market, but I do not think that is possible for every zemindar or cultivator to have that knowledge.

Sir F. H. Stewart.—*Q.*—Have you any supplementary remarks to make ?—*A.*—With reference to this question of marketing staple cotton in the Punjab at the present moment there are 250,000 acres under American long staple cotton. The Agricultural Department have done all they possibly could to help the cultivator and to show him the advantage of long staple quality against short staple. They invite buyers from all parts of India to come to these auctions and some of the biggest buyers in India attend. I may be mistaken but I do not think that some of them are quite aware of the various qualities which are marketed. For example, at the recent auctions there were only two buyers and there were no other buyers to compete against. That is a point that I think would require the assistance of exporters as well as of Government.

Q.—How long have these auctions been going on ?—*A.*—They started on the 22nd October at intervals of three days. In order to advance the industry and market the cotton Government has been holding these auctions at various centres. These auctions have been going on for the last five years.

Q.—Are they widely known ?—*A.*—Yes. The Bombay people and the Nagpur people are aware of them.

Q.—Have you any definite suggestion to make as to anything more the Government could do or the buyers could do ?—*A.*—A system of selling agency.

Mr. C. E. Low.—*Q.*—Have you approached the British Cotton Growers' Association in the matter ?—*A.*—I discussed the matter with the Secretary very often.

Q.—They have expressed themselves anxious to step in and keep the prices up ?—*A.*—They are very anxious to see that a good quality is grown and adequate price is paid for it so far as the producer is concerned.

Q.—Did they make any practical offer or suggestion as to how that end can be secured, such as by the establishment of selling agencies ?—*A.*—That was their idea.

Hon'ble Mr. H. J. Maynard.—*Q.*—Is it not rare for only two buyers to be present at any of these auctions ?—*A.*—We have more buyers.

Q.—In the one that I attended there were many and my impression then was that the competition was pretty keen.—*A.*—It was very keen. That was last year.

Q.—But there was something special in the conditions of this year for the competition not being keen ?—*A.*—Yes. I am not bringing up this matter from the point of view of the individual buyers. I want to bring it before you more with reference to the independent cultivator, the smaller *abadkar*, in order to try and better his lot.

Q.—I take it that owing to special circumstances of this particular year there was not a keen competition.—*A.*—The conditions of last year and this year have been entirely different.

WITNESS No. 367.

THE HON'BLE MR. C. A. H. TOWNSEND, I.C.S., *Director of Agriculture and Industries, Punjab.*

*WRITTEN EVIDENCE.

Financial aid to industrial enterprises.

Capital.

Q. 2.—Trade, and land with its produce, have, until recent years, absorbed much of the available surplus capital of the Punjab, and, of these two, investment in land absorbed the greater proportion. The Alienation of Land Act had the indirect effect of diverting, to some extent, capital from land to trade and industry : the success of the Swadeshi movement, and the expansion of Indian banking and industry between 1902 and 1912, shows this. But much of the surplus capital of the province still concerns itself with the produce of agricultural land, or with real estate in large cities. At present what capital there is invested in industries in this province is provided by moderately wealthy respectable shopkeepers, bankers and contractors, and to a less extent by professional men, particularly lawyers.

There is undoubtedly a very great deal of capital lying untouched throughout the province, in the form of gold, principally with bankers, and to some extent with the more prosperous agriculturists. This tendency to store capital has been accentuated by the recent failures of commercial enterprises in this province. Broadly speaking, it may be said that the Punjabi has no experience in investments, and is generally loath to trust his money out of his sight. He will put his money into a bank and leave the bank to do the work for him, trusting it blindly, until suddenly seized with some wild and unreasoning panic, when he will withdraw all his money at once (see the report, already referred to, on the recent causes of failure of economic enterprises in the Punjab). As a result of these failures, I direct the Commission's attention to the fact that at the close of the financial year 1911-12 there were 194 registered companies in this province, with a paid-up capital of Rs. 1,94,37,219 : at the close of the financial year 1915-16 there were 81 such companies with a working capital of Rs. 1,46,41,772.

Q. 3.—Undoubtedly, there have been far more cotton-ginning factories, and, to a less extent, cotton-baling presses, started in the province in the last ten years than was necessary. The matter is being dealt with in detail by Mr. Taffs, the Inspector of Factories, who will give evidence before the Commission. I will content myself here with noting that a cotton-ginning factory was, until the boom in them started, an easy way of making money, which did not require a great deal of capital, and could therefore be financed by a Hindu joint family, or a small party of friends. So it appealed to the public. These factories and presses nearly all belong to "pools" now, and one or two factories have never been worked since their erection and yet have proved fairly lucrative to their owners, thanks to the income from the "pool."

In the newly-developing Lower Bari Doab Colony Government has more power in this matter of ginning factories than elsewhere, and has under consideration proposals to ensure that no more sites are sold by it for the erection of such factories than will be required by the cotton requiring ginning : the factories to be erected will almost certainly have to comply with certain requirements as to space and general design, whose object is to ensure cleaner and purer cotton leaving the factory than is now the case. The matter will doubtless be dealt with by the Cotton Committee now touring through India.

Government assistance.

Q. 4.—The experience of this Government in the way of subsidizing industrial enterprises has been very small and not fortunate. A subsidy was promised to the Ambala Glass Works in 1911 on condition of training a certain number of apprentices, to be nominated by Government, in approved methods of glass-making. For the purposes of this training Austrian experts were to be entertained. The experts were entertained, but only for a short time : no body replaced them : it was found that the apprentices were not properly taught : and, in short, the whole enterprise was a failure. It was brought to a speedy conclusion.

Similarly, Sir Louis Dane's Government gave in 1910 a grant to the Salvation Army Weaving School at Ludhiana for teaching improved methods to weavers. The grant was not renewed at the end of the five years for which it was given in the first

*My replies are merely my own opinions and should be taken to be in no way binding on my Government.

I direct the Commission's attention to—

(*i*) Mr. Badenoch's monograph, just published, entitled "Punjab Industries, 1911—1917," bringing Mr. Latifi's "Industrial Punjab" up to date ; and

(*ii*) A note, already in the Commission's hands, showing results of enquiry made by a small committee into the recent causes of failures of industrial enterprises in this province.

instance. Frequent visits to the school convinced me that it was not appealing to the weaving classes of the province : and that the Salvation Army was, perhaps, pushing unduly its own loom with the weavers against the more satisfactory " fly shuttle loom," and, in short, that Government was not getting value for its money.

Q. 5.—Government in this country has to discharge very many functions which in more advanced countries are undertaken by the public itself. I am therefore distinctly of opinion that Government aid should be given to existing or new industries, especially the latter, in India to a greater extent than would be done, say, in England. How that aid should be given I have no very clear ideas. It appears to me that all the various methods of giving such aid that are suggested in this question might be tried, that being adopted in each particular case that seemed best suited to it.

Suggestions Nos. (1) and (2) could be employed with advantage in helping a new or existing enterprise, already properly supplied with capital, over some particularly thorny part of its path, where some initial difficulty had to be overcome, or to enable a small industry to expand to an extent that would secure it the advantages of production on a large scale. No. (4) should generally be the method adopted to aid new enterprises. Loans might be granted, without interest at first, afterwards bearing interest which would gradually rise to the market rate : instalments of principles also would be demanded at the latter stage. Such an idea is already recognised in the advances by Government for agricultural purposes—*taccavi* system. What is now wanted is industrial *taccavi*.

Suggestion No. (5) is suitable for small industries, where machinery is simple, and not expensive. Suggestion No. (7) would seldom be applicable, although there seems no reason why it should not be applied to a large new undertaking, the first of its kind in a particular province.

The adoption of suggestions Nos. (3) and (6) would require much consideration. Should Government follow either of them, the Indian public might possibly understand the procedure as an absolute Government guarantee of the undertaking, and invest money accordingly. Should, subsequently, such enterprises come to grief, Government might be placed in a somewhat difficult position.

Q. 6.—Government supervision would have to be applied to a greater or less degree if any methods of Government assistance are invoked. Far more Government control would be necessary if suggestions Nos. (3) and (6) in question 5 are followed, than would be necessary in the case of the other suggestions. I should not, however, make such control or supervision stricter than the absolute minimum. Government would have to run its risks like other people. I assume Government would have a large staff of well-paid experts to advise on industrial enterprises applying for assistance. On that assumption, and also assuming the advise so given to be followed, I do not think that any form of Government supervision should be applied save in the case of suggestions Nos. (3) and (6) in question 5. If they were followed, I should have a Government director on the enterprise concerned.

Q. 7 *and* 8.—The experience of the Punjab in regard to pioneer factories is hardly one on which a general policy can be framed—so limited is it. The only pioneer factory possessed by Government is the Government Resin Factory at Jallo near Lahore. This venture has met great success, having within two years paid off its original outlay and made, in addition, a handsome profit. But there were special reasons for success in this case. The process of manufacture is a simple one ; there is no highly-complicated machinery, no very involved processes. Hence, it can well be run by a Government department, which, as yet, has little specialised experience in this particular industry. Again, Government has, to a large extent, a monopoly of the raw material, the resin obtained from the " pinus longifolia." With complete control over large areas of forest, Government can control better than could a private agency the collection and transport of the raw material. Pioneer factories.

It would thus appear that this is a case in which Government should never close down the factory, nor hand it over to a private capitalist. The industry is not capable of indefinite expansion, and were it handed over to private enterprise, it would merely be the gift of a monopoly to a private firm which would be more likely to abuse it than Government.

The conditions were, however, in this case, as already said, exceptional. Where such conditions do not exist, it is extremely doubtful whether much successful pioneer work can be done by Government. To pioneer a complicated industry requires a specialised knowledge and experience which Government can rarely command. A large firm which has already fought its way to the forefront of the world's industry is much more capable

of pioneering industries than is Government; witness, *e.g.*, the skill with which Steel Brothers of Rangoon are developing the mineral oil question in the Attock District; and in connection with the possibility of alkali manufacture on a large scale in this province, it seems at least worthy of consideration whether a firm like Brunner Mond & Co. would not do the work better than Government. As showing that Government is not well fitted for this type of work, I may quote the case of a small mineral oil spring in the Mianwali District, which has been worked by the Military Works Department with crude and old-fashioned methods for many years. Some years ago, to increase the supply of oil, that department sunk a well directly over the spring in question. No result followed. As was pointed out by the Director-General of the Geological Survey, the well was sunk at the very place where a free flow of oil could not be expected. In other words, the Government department had not the experience necessary for this kind of work.

Financing agencies.

Q. 9, 10 *and* 10 (*a*).—I have nothing to add to what is said on the report on the recent failures of commercial enterprises in this province.

Co-operative societies.

Q. 11 *and* 12.—The Registrar, Co-operative Societies, Mr. Calvert, will doubtless give evidence on these points. Weaving and shoe-making have been helped by co-operative societies to some extent in villages in this province. The results so far attained are not great, partly owing to shortage of staff.

Technical aid to industries.

Demonstration factories.

Q. 19.—Tanning, match manufacture and the manufacture of tiles, cheap crockery and acid jars, all suggest themselves as suitable for demonstration factories in this province. As regards the first, there is abundance of raw materials, but the methods followed are bad. Troup's monograph on matches contemplated a successful future for this industry in the Punjab. And, as regards tiles, cheap crockery, etc., the Eureka Porcelain Works, Lahore, have proved that their manufacture is commercially possible: but the methods followed in those works could doubtless be improved.

Industrial surveys.

Q. 25.—The existing surveys are more general than particular: more geographical than industrial. In a general survey it is difficult to give adequate attention to one specific detail. As an instance of our present defective information I can refer to that of trees with tannin barks in the forests of the province. Some years ago the then Director of Industries asked the Conservator of Forests for some specific information on this point and was informed that to collect it a special staff would be necessary. The information is not yet forthcoming.

Little definite is known regarding the clays and glass sands of the province, and I do not think that the Salt Range has yet been thoroughly explored from a geological point of view.

It is most important for such surveys as I have here in mind that the instructions for each survey should be precise and not general, that each survey should be for a definite industrial article in relation to its industrial purposes. Were the general results of such surveys made known through the Press, attention would be more widely directed to the official reports.

Assistance in marketing products.

Commercial museums.

Q. 29.—I do not think a commercial museum would be of much practical use in this province. Prices are always fluctuating and it would require good organization to keep the information at such a museum up-to date.

Sales agencies.

Q. 30.—I paid a short visit to the "Village Industries" Emporium at Cawnpore recently. I think a similar institution would be useful in this province.

Exhibitions.

Q. 31.—The small exhibition of improved weaving appliances that tours for some six months every year through important weaving tracts of this province undoubtedly does good, as many weavers, for whom these improved appliances are meant, live in villages, and such an exhibition is the only possible agency of bringing home to them that improved appliances are possible.

Trade representatives.

Q. 36.—I see no particular advantage in the Punjab having trade representatives in other provinces.

Government patronage.

Q. 38.—The rules are not quite as easy in this respect as they might be. At one time I remember it was desired to get Government patronage for a small cutlery manufacturing concern, in so far as the provision of desk knives, etc., was required. Nothing came of the proposal on account of difficulties raised by the rules. I am now again in correspondence with the Controller of Stationery on the subject.

Other forms of Government aid.

Land policy.

Q. 41 *and* 43.—Undoubtedly, difficulties are thrown in the way of the acquisition of land for industrial concerns, not so much by the land policy of Government, as by the customs of the people, to which almost the force of law has now become attached. Mr. Armstrong of the Dhariwal Mills has suffered in this matter and will doubtless explain his case to the Commission. In the first place, the Pre-emption Law throws difficulties in a purchaser's way: a co-sharer in the village brings a case in which he alleges that he, as co-sharer, is entitled to buy the land instead of the industrial enterprise concerned. The result is endless litigation and worry for the enterprise. I would emphasize that, more often than not, the cases such co-sharers bring are merely to blackmail the enterprise, and not really with the object of getting the land. This difficulty, under the Pre-emption Act, however, does not arise when the sale in question has been of agricultural land by a villager: as in such cases the Deputy Commissioner has to sanction the sale in question under the Land Alienation Act: and, in the case of land alienated with such sanction, no right of pre-emption can exist—*vide* section 9 of the Punjab Pre-emption Act of 1913.

But the Customary Law of the Punjab peasantry here opposes another obstacle to the industrial concern trying to extend its operations, and for that reason wishing to add to its land. Ancestral land—that is land which the seller did not purchase himself, but inherited—cannot, as a general rule, be sold save for valid necessity. Otherwise, those to whom it would descend in due course can bring a case to set aside the sale. Many cases have been brought in the Punjab courts on the point as to what was "valid necessity."

But the possible worry and expense to the industrial concern wishing to increase its land are obvious. And here again I would emphasize the fact that such cases are as often as not brought with a view to blackmail.

Government has not in any case that I can find so far ever put the Land Acquisition Act in force to help an industry in acquiring more land. Sections 40 and 41 of that Act have always stood in the way.

The remedy for all these troubles should be, to my mind, a short enactment, giving the Local Government power to acquire land for industrial concerns when satisfied that it was to the public interest (in its widest sense) that such acquisition be made. The provisions of Customary Law should be definitely debarred from applying to such alienations. I attach much importance to this. I have before me as I write a record of a case in which a proposal to establish a large spinning and weaving mill in the Gurdaspur District came to nought owing, *inter alia*, to difficulties in the way of acquiring land.

This Government has, I may note, recently agreed to reserve an area of 5,000 acres in the new Lower Bari Doab Colony to provide in the future land for peasants expropriated from their original land by industrial concerns.

Q. 43 (*a*).—Government in this province can help industrial concerns by the supply of power from the waterfalls in canals and rivers. The Dhariwal Mills and the Amritsar hydro-electric scheme, which the committee will examine on the spot, are cases in point. The former being a concern that requires a constant supply of power has had to instal a standby steam plant, to provide power for such periods as the canal is closed for cleaning, etc. Power, therefore, from canals, being periodic, would appear better adapted to the working of agricultural wells, which do not require to be continually working—this is the case with the Amritsar hydro-electric scheme—than the working of concerns which require continued power. For them the possibilities of the Punjab rivers merit consideration. But in this connection it should be borne in mind that these rivers run very full in the summer, and with very much lower supplies in the winter.

Training of labour.

Industrial schools.

Q. 46.—Mr. Heath will give evidence about industrial schools in the province—so I leave that part of the subject to him. I am inclined to think that industrial schools should be under the Department of Industries and not that of Education. But the latter department should either be represented on the "Advisory Industrial Board of the Province," and would thus have a voice in the management of industrial schools, or should be given some other way of making its voice heard in large matters of policy as regards the management of such schools.

Official organisation and administration.

Q. 56.—There is in this province a combined Director of Agriculture and Industries, who is also at present Controller of Munitions. There is abundant work for two officers, and the office of Director of Agriculture should be separated as soon as possible from that of Director of Industries.

There is an Advisory Board of Industries, but it never meets, and is at present, at any rate, of no use. It could, however, undoubtedly be of use were a whole-time Director of Industries appointed. It should be merely advisory, without executive functions : these should be left to the Director of Industries. As to the latter I would take the best man offering, be he business-man, non-expert official, or a technical specialist. The circumstances of one province differ from those of another, and the circumstances of a province do not remain the same. Hence, I deprecate any hard-and-fast rule being laid down that the Director of Industries must be a business-man, or *vice versa*. And in this province, I foresee considerable difficulties in getting a suitable business-man to fill the post, who would be willing to accept the salary Government is likely to attach to it.

There should be an Imperial department also with various specialists attached to it, *e.g.*, in glass-making, paper-making, pottery-making, tanning, etc. To them the provincial industrial departments should refer for advice when any case in connection with those industries came before them. At present I have a case before me in which a local firm asks for advice *re* glass-making. In this matter I need the advice of a glass expert's but the only man available is the glass expert attached to the United Provinces Government. I am asking my Government to ask the United Provinces Government kindly to let their glass expert advise in this case. But whether that Government will agree is another matter.

Cottage industries.

Cottage industries are certainly of some importance here ; but they are mainly "luxury" industries. I have no very clear ideas as to how they should be developed. The enamel and pottery work of Multan, the inlaid carpentry work of Jullundur and Chiniot and the jade work of Bhera are a few that suggest themselves to me as worthy of encouragement. The travelling exhibition of improved weaving appliances certainly does, as already said, useful work.

Technological institute.

Q. 71 *and* 71 (*a*).—I can see no need for a technological institute in this province, though I consider there should be one such central institute for the whole of India, thoroughly well staffed, and completely fitted up, to which Provincial Departments of Industry could send students. The possibility of lads who have passed through the course at such an institute thinking themselves entitled to Government posts merely because they have done so should be borne in mind.

College of commerce.

Q. 80.—The Punjab is not yet sufficiently advanced financially and industrially to support a fully constituted and equipped college of commerce. Were one to be started at this stage there would be considerable danger of turning out a too expensive article, for which there is, at any rate at present, no demand in the province. The present situation is, however, by no means satisfactory. The "Clerical and Commercial Examination" of the Punjab University serves no very useful purpose. Most offices prefer to engage a lad who has passed the Matriculation Examination, and count on his acquiring a clerical and commercial education afterwards. But great need has been felt in the past, and greater need will be felt in the future, for a more educated type. The staffs of most of the Swadeshi banks knew nothing about banking : and, if Indian banking is again to raise its head, it must be supplied with an Indian staff of branch managers with education and experience in banking methods. So also in the case of auditors : there is a growing need for reliable Indian auditors : and a more highly qualified clerk than has as yet been available will soon be demanded in all Government offices. There are institutions which are attempting to supply the necessary product, but at present their energies are not co-ordinated and they have no standard to work to. A pioneer effort is, however, being made so far as Government institutions go by Mr. Ernest Smith, Headmaster of the Joint High and Clerical and Commercial Schools of Amritsar. In a two-years' course he is giving a much wider and more thorough training than the present Clerical and Commercial Examination contemplates. What he now asks for is a proper diploma to work for. At the same time the Punjab University has now under consideration a scheme for a two-years' commercial course, specially calculated to supply the demand of Northern India for a not too elaborate finished product. This seems the proper course to adopt : extend a curriculum something like Mr. Smith's to other high schools, and at the same time institute a diploma course at the University. The whole course should take no more than three years as a maximum, either two years at school and one at the University or *vice versa*. Particular and careful attention should be paid to modern commercial English, correspondence, precis, and office routine, and a minimum standard in such should be insisted upon.

Local bodies.

Q. 81 (*a*).—The present general system of municipal taxation, octroi, is a hindrance both to trade and to industry. Municipalities can assist by substituting a terminal tax, or some other form of taxation on property, for it. The matter is gone into in more detail in Mr. Badenoch's monograph "Punjab Industries, 1911—1917."

Municipalities can also help in starting industrial schools—if run on proper lines—and by giving scholarships for technical and commercial scholarships elsewhere.

Q. 83.—My experience is small, but I not infrequently have correspondence with the Director-General of Commercial Intelligence, and have received assistance from that officer. Commercial intelligence.

Q. 84.—Occasionally, I find the *Indian Trade Journal* suggestive, but it is generally rather vague, and consists too much of extracts from other papers. Trade journals.

Q. 85.—I think the Imperial Specialists in glass-making, etc., who I have suggested in my replies to questions 56—62 might well publish monographs on their various subjects, suggesting improved methods, which should be circulated to all engaged in those industries throughout India, in the various vernaculars, copies being also sent to the various provincial Directors of Industry.

Other forms of Government action.

Q. 89.—Considerable regret has been expressed in the province at the refusal of the Government of India to adopt a system of hall-marking for silver. Many people have insisted on the necessity of granting certificates of quality. In addition to silver the necessity for hall-marking *pashmina* shawls has been urged. These beautiful shawls are made, as is well known, from fine wool from Thibet. Before the war, however, many shawls sold as *pashmina* were made in Germany, and, as the product was not good, the trade was beginning to get a bad name in Europe. The Ludhiana merchants, who are the principal dealers in these articles, declare that they would willingly pay a small fee for the privilege of having a certificate for these goods. Certificates of quality.

Q. 95.—It has been suggested, and the suggestion, I think, merits consideration, that articles patented in India should be manufactured in India. I perceive of course the many difficulties inherent in the suggestion. Still it might be considered. Patent Laws.

This province can never, I think, be a great industrial province. The great reason militating against this is the scarcity of labour which is a very great problem to many factories. The high price of Bengal coal here owing to the long railway lead compared with other provinces must be borne in mind. Perhaps the discovery of oil in Attock, and the possibilities of our water-power may solve this difficulty. But our mineral resources are very limited. Limestone, hides, oil and cotton-seeds appear to me to be raw products, the careful examination of which should be made. They occur in abundance in the province. General.

Factories, *qua*-factories, will not add to the happiness of the province, but as increasing the wealth of its people should be welcomed, and I should therefore be glad to see their establishment to a reasonable extent.

Finally, I would note that Mr. Carter, Speers, the Chemist attached to the Forman Christian College, is most anxious to assist the Department of Industries, and I am indebted to him for advice on chemical matters in connection with a small dyeing school recently established at the Central Weavery. He is, I understand, erecting a laboratory at his college in which special attention will be paid to industrial problems. I understand co-operation of this manner between Government and research establishments is not uncommon in the United States, America. Something like it might perhaps be usefully developed in India.

I am much indebted to Mr. Badenoch's aid in drawing up this note.

ORAL EVIDENCE, 8TH DECEMBER 1917.

Sir F. H. Stewart—*Q.*—How long have you held this dual appointment ?—*A.*—Three years.

Q.—Was it dual appointment before that ?—*A.*—Yes.

Q.—How long have industries been associated with agriculture in this way ?—*A.*—Since 1911.

Q.—That was the first appointment ?—*A.*—Before that there was a Director of Industries and Land Records. Sir Louis Dane started that.

Q.—You refer to the Alienation of Land Act that is a Punjab Act ?—*A.*—Yes.

Q.—Can you tell us very shortly what it is ?—*A.*—It was brought in in 1901. There had been great agricultural problems ; it was said that all the land was passing into the hands of money-lenders. The zemindars used to mortgage land to money-lenders. They wanted to get money and signed any documents put before them. It was found that 20 per cent. of agricultural land was passing into the hands of the money-lending classes, who became landowners. There was great agricultural discontent in consequence, and the problem was considered for a very long time. Lord Curzon took it up, and the Land Alienation Act was passed. The Act is briefly to the effect that an agriculturist cannot part with his land to a

member of the money-lending classes. A money-lender, who is an owner of land, can sell it to anybody he likes.

Q.—It was introduced in the interests of the agriculturist ?—*A.*—Yes, and has been exceedingly successful.

Q.—Had the Act the effect of setting free a great deal of capital for industries ?—*A.*—Yes, that was the idea. Undoubtedly, it did set free a lot of capital.

Q.—Not much capital comes into this province from other parts of India ?—*A.*—My experience does not point that way. There is, however, a spinning and weaving mill in the province of which most of the capital was subscribed in Bombay.

Q.—That is the one referred to in this book, which is being attended with a certain amount of success ?—*A.*—Yes.

Q.—Do you find that the professional classes invest money in industries ?—*A.*—Such money as is invested in industries does come from the professional classes.

Q.—It does not come from zemindars and land-owners ?—*A.*—To a very small extent.

Q.—Do you think the position is altering for the better, or is it pretty much the same as what it was before the crisis ?—*A.*—It is altering very slowly I should say.

Q.—You refer to the Salvation Army work at Ludhiana. You are inclined to think that perhaps they made undue efforts to push a loom of their own invention ?—*A.*—That was my impression.

Q.—And it was too expensive also ?—*A.*—Yes. The plant was expensive. When I assumed my present duties I was dissatisfied with the school. I found it was not earning its grant at all. There were nearly all Christian boys there, and the school was not getting into touch with weaving in the province as a whole.

Q.—The grant has now been discontinued, but they are left with the use of the building ?—*A.*—The grant was given for three years, and I recommended that it should not be continued.

Q.—Does your department recommend any special loom ?—*A.*—We have the fly-shuttle loom, which is meeting with a certain amount of success. It goes out into the villages when we send our men on tour in the winter.

Q.—With these travelling demonstrators ?—*A.*—Yes ; we are just touching the fringe of the problem. It is quite successful, but the people want encouragement. They are a very slow and backward class.

Q.—The fly-shuttle loom is a good deal cheaper ?—*A.*—Yes, cheaper than the Salvation Army loom.

Q.—Then you refer to this Resin Pioneer Factory. A good deal of the success of that is due to the war ?—*A.*—I have nothing to add to what Mr. McIntosh has said.

Q.—Do you agree with Mr. McIntosh that it is a case in which Government should retain control of the industries ?—*A.*—I do.

Q.—For the same reason that the raw products are Government's ?—*A.*—Yes.

Q.—Is permanent damage done to the trees by tapping them for resin ?—*A.*—I cannot tell you. Mr. Badenoch says no.

Q.—With reference to match-making, you refer to a monograph on matches, of which we have heard a good deal. Perhaps the recommendation of the wood in that was not a very happy one ?—*A.*—We have no experience in this province. I have seen the Bareilly match factory two or three years ago when it was a great failure on account of the *simal* wood used. Mr. Badenoch tells me that one man in the Punjab tried *chil*, which was also a failure.

Q.—You think it would be useful to have here similar sales emporia to that at Cawnpore ?—*A.*—Yes, for all village industries.

Q.—Is there a sufficient number of village industries in the Punjab ?—*A.*—Not so many as in the United Provinces, but quite enough to keep one sales emporium going.

Q.—It is rather a question of keeping alive than of developing ?—*A.*—That is it. They make things and want to come in touch with the market.

Q.—With reference to the question of land, you say, in answer to questions 41 and 43,—"This Government has, I may note, recently agreed to reserve an area of 5,000 acres in the new Lower Bari Doab Colony to provide land in the future for peasants expropriated from their original land by industrial concerns." Is Government considering the advisability of acting under the Land Acquisition Act ?—*A.*—I don't know that it has gone so far as that.

The Dhariwal Mills, which are really the only successful enterprise in the province, are anxious to extend, but they cannot come to terms with the villagers. The manager is still negotiating. The villagers are sticking out for very exhorbitant terms. They want the same amount of land as they have got, and, in addition, want full price for their land.

Q.—Then you refer to your Advisory Board of Industries, which you say "never meets and is at present at any rate of no use. It could, however, undoubtedly be of use were a whole-time Director of Industries appointed." How many members does that Board consist of?—*A.*—I am sorry I cannot tell you; it is such a large Board. You will find it in Mr. Badenoch's monograph. I find that the Board never really came into existence.

Q.—It is too large to be practically useful?—*A.*—Yes.

Q.—To be of real use such a Board should be small?—*A.*—Undoubtedly.

Q.—And it would mostly have to consist of men usually resident in Lahore?—*A.*—I don't think that is necessary. A business-man could come from Rawalpindi or Ambala. Personally, I would deprecate having Lahore men entirely on it.

Q.—Do you think you could get suitable business-men to serve?—*A.*—Yes.

Q.—Would you give the directorate power to make special enquiries and to appoint special committees for specific purposes?—*A.*—Yes.

Q.—One criticism we had was that it would not have the knowledge to help village industries properly?—*A.*—That would depend upon the weight you attach to village industries. I do not attach much weight to them in this province.

Q.—Is the Industrial School at Amritsar a private enterprise?—*A.*—It is run by the Municipality.

Q.—The Principal wants a diploma. Government would merely be asked to countersign it?—*A.*—Either Government or some authority such as the Punjab University, or the Department of Industries when properly organised.

Q.—With reference to certificates of quality, you think that Ludhiana merchants would welcome the introduction of Government certificates of quality?—*A.*—Yes.

Q.—You would only have them voluntarily: you could not enforce them?—*A.*—You would have them voluntary: you could not make them compulsory.

Q.—Are there any other classes of trade for which you think they could be introduced with success?—*A.*—I cannot think of any at present.

Q.—You would not contemplate it for raw products?—*A.*—No.

Q.—I don't quite understand your answer to question 95, about articles patented in India. Are you suggesting that articles manufactured outside India should receive no protection?—*A.*—The suggestion was made by Mr. Maynard. I think the idea originally came from what was done in England some years ago; they passed a law that many articles manufactured in Germany got only provisional protection in England for a few years. To get permanent protection they had to be manufactured in England.

Mr. C. E. Low—*Q.*—Is there any possibility of growing beet sugar in the Punjab?—*A.*—Yes, it has been considered, and it can be grown quite successfully.

Q.—Is the inability to set seed here a fatal objection? Is the seed rate too low?—*A.*—I think so.

Q.—The thing has not gone far enough to be able to compare it, as an economic proposition, with the growing of sugarcane?—*A.*—No.

Q.—Do they keep sugarcane in earthern clamps in any part of the province, the same as they do in the North-West Frontier Province?*A.*—Yes.

Q.—That was being considered in the Frontier Province as a means of extending the sugarcane-crushing season by crushing standing cane, beet, and then clamped cane?—*A.*—When you say "put in clamps" do you refer to the seed cane, or whole cane? I do not think the whole cane has been considered.

Q.—What is your opinion about the prospects of the sugar industry here generally?—*A.*—My opinion is that this can never be a large sugarcane province, on account of the cold climate. Mr. Barnes, our late Chemist, was of opinion that the only part of the province to grow sugarcane was the south-east, where the cold is not so great as in the north. We have a proposal to start a small sugarcane factory somewhere down there. Sugarcane will not seed in the Punjab. It does not seed except in South India.

Q.—Have you had any of the Coimbatore varieties up here?—*A.*—We have had two and are trying them experimentally. It is as yet too early to say anything.

Q.—A difficulty struck us in connection with the compulsory acquisition of land by Government for industrial undertakings and that was that it would be very hard to find a

proper criterion by which Government could decide whether compulsory acquisition should be practised or not; and a criterion has been furnished to us recently by a very responsible source, something on these lines :—Government may acquire, if it is satisfied that the development of the industry is in the public interest, and the industry cannot be developed without such acquisition. What do you think of that?—*A.*—The criterion is all right; it all depends upon the satisfaction of Government. One Government may be more satisfied than another; it depends upon the personal equation of the man to be satisfied.

Q.—You are in favour, I gather, of some sort of legislative provision to enable a land-owner to give a clear title when he wants to sell for industrial purposes?—*A.*—Yes.

Q.—And for that, statutory legislation is necessary?—*A.*—Yes.

Q.—You are in favour of it?—*A.*—Yes, and I would also have an enactment to take up land compulsorily. The Dhariwal Mills have got to extend, and the owners are sticking out for exhorbitant terms.

Q.—You recognise that the criterion I mentioned would not help the Dhariwal Mills?—*A.*—I do not know that I do recognise it. I don't know that it would not be in the public interest that the Dhariwal Mills should extend. It is the only one in the Punjab.

Q.—Some doubt arises in your mind as to whether an industry is to be considered as a general question or a local one?—*A.*—I should consider this one to be both.

Q.—Have you considered any views on the subject of the alleged hoarded wealth of the Punjab?—*A.*—The impression I have is that there is a great deal of money. I was Settlement Officer in one of the poorest districts of this province. I was once trying a case where a poor man had 200 sovereigns in his house, and I was informed that all the villagers had money hoarded up. On another occasion a wealthy *Bania* stated to me that he had all his money buried.

Q.—You don't think that these cases that come to light from burglaries are due to the detective action of the burglars?—*A.*—I do not think so.

Q.—With regard to this question of the over-creation of cotton-ginning factories. Are these combines registered under the Companies' Act?—*A.*—I do not think so. I am fairly certain they are not.

Q.—With regard to this fly-shuttle you were speaking about, is it simply the slay you are putting out, or the whole loom?—*A.*—The whole loom.

Q.—Have you seen any of the efforts which are being made in Bombay to popularise the same type of loom?—*A.*—I have not.

Q.—You work by means of peripatetic parties?—*A.*—Yes, there are four of them going out now.

Q.—Do you work in combination with existing credit societies among weavers?—*A.*—To some small extent.

Q.—You speak of various ways in which Government might give financial assistance to industries. All these methods presuppose—don't they?—the capacity on the part of Government to form a well-informed judgment on the probabilities of the success of any particular enterprise?—*A.*—Yes.

Q.—And as an essential condition for anything of the kind, the existence of exports must be presupposed?—*A.*—Yes.

Q.—That is to say, that whether it is proposed to give financial assistance by Government, or by actively assisting such industries in the way of pioneering, or by technical assistance, the whole matter depends on a number of experts properly organised and made properly available?—*A.*—Certainly.

Q.—Take an industry like the glass industry—I believe it to be the case that you cannot get an all-round glass expert, and to start the industry you want the advice, not only of chemists, with regard to your raw material, but of furnace-makers, pot-makers, furnace men who deal with the melting of glass, blowers, and, of course, if you are going in for moulding, of moulders. It will be very unwise to risk the starting of any glass enterprise on a large scale without having the question examined by an all-round lot of experts. Does it not strike you that it would be uneconomical to have a complete outfit of glass experts like that for each province?—*A.*—It does.

Q.—Don't you think that in a case of that sort it would be extremely advisable to have your experts attached to an Imperial department in the first instance? I think you bring out a similar point?—*A.*—Yes, I state that in my evidence.

Q.—The point is that experts are a practical necessity, and you want an adequate supply of them, and unless you are going to waste a great deal of money, you must in the first instance, and until things get on to a more established basis, have a considerable proportion of the experts attached to some form of central organisation where they would be available?—*A.*—Certainly.

Q.—You say, "Little definite is known regarding the clays and glass sands of the province, and I do not think that the Salt Range has yet been thoroughly explored from a geological point of view." With reference to clays, have you sent any specimens from here to the Bombay School of Art for investigating the pottery possibilities of materials?—*A.*—I do not think so.

Q.—In regard to Government patronage, how do you think a Stores Department in India, a part of whose policy would be the purchasing of Indian manufactured articles, would work?—*A.*—I think that is the only way you can work it, otherwise if every department was allowed to purchase, you would get competition, and Government would have to pay high prices.

Q. Your position as Controller of Munitions strengthens that view?—*A.*—Yes.

Q.—Would you like to see some sort of arrangement on the present lines, with reference to the purchase of Government stores in this country, continued, such as is now being worked by the Munitions Board?—*A.*—Yes.

Q.—You say, "I can see no need for a technological institute in this province, though I consider there should be one such central institute for the whole of India." Have you considered another possibility, *viz.*, specialised technical institutions? Supposing you had a technical institution at Sakchi which specialised in metallurgical research work?—*A.*—That seems quite a good idea.

Q.—You recognise the special facilities that would be afforded, both to the students and the professors, in dealing with problems on the spot, and being in immediate personal touch with men engaged in industries, who would present their problems as they arose?—*A.*—Yes.

Q.—Is there any particular line of research which you think could be usefully specialised in here?—*A.*—Our oil-seeds and tanning industry. We have enormous potentialities in limestone.

Q.—Turning to the question of oil-seeds, is there any local market for cake?—*A.*—Very little. There is a market, but not for machine cake.

Q.—Is that dislike justified on chemical grounds?—*A.*—It is due to the machine, which expresses more oil than does the country press.

Q.—Have you seen analyses of the country oil-mill cake?—*A.*—I have seen such analyses.

Q.—Was the oil that remained in the cake very excessive?—*A.*—It was very much more in the country cake than in others.

Q.—Do you know that agricultural chemists consider that a lot of the oil fed in the form of cake to cattle is wasted, and that it would be more economical on scientific grounds to feed the cattle on mill cake?—*A.*—I have tried experiments in that line myself.

Q.—With what results?—*A.*—My predecessor got up an oil factory in Lahore to make cotton cake. The zamindars said that the cows would not eat it.

Q.—Do the Agricultural Department feed their cattle with mill cake?—*A.*—With cotton-seed, not cotton cake.

Q.—Do you feed your cattle with any form of cake?—*A.*—Rapeseed cake.

Q.—Is that from country mills or from factories?—*A.*—From country mills.

Q.—Is any attempt being made by the Agricultural Department to popularise the use by cultivators of factory-made cake for feeding their cattle?—*A.*—Not at present; we are taking up more important things.

Q.—You realise that, as a condition precedent for each factory, that it must have a local market for its cake?—*A.*—Undoubtedly. We are quite prepared to take the problem up in time.

Q.—How far is there any direct foreign trade from the Punjab: how far do merchants here consign direct to any foreign country?—*A.*—In the Canal Colonies there are commercial firms as Rallis and Volkarts—these have agencies all over the country. They export to Karachi and Bombay.

Q.—I was alluding to the Indian merchant. I understand that some of your dealers in hides and skins consign their goods to foreign countries?—*A.*—There is a certain amount of business between Amritsar and America direct.

Q.—They consign direct, and some, I suppose, consign through Bombay and Calcutta houses?—*A.*—Yes.

Q.—Do such men find difficulty in corresponding with foreign firms?—*A.*—I have not come across any case of difficulty. We have carpet manufacturers in Amritsar who make carpets on direct orders from America.

Q.—Has anything been done ever to help and increase that kind of thing here?—*A.*—Nothing so far as I am aware.

Q.—You are aware no doubt that the Board of Trade will give you a list of approved firms dealing in certain kinds of articles in America or anywhere you like? Has any attempt ever been made to obtain such lists?—*A.*—No, because the question has never been raised.

Q.—Do you consider it desirable to try and get local Indian merchants into direct touch with foreign firms beyond seas in respect of their exports?—*A.*—Yes, so long as the firms beyond seas are good ones, certainly.

Q.—With regard to this question of hall-marking, do you think it practicable, supposing Ludhiana merchants wished to have these goods stamped or otherwise certified for them, with a little assistance from Government, to organise their own system of stamping or certifying? You are aware that in several places where there is a large market for hand-made piece-goods, the merchants themselves have their own committees for checking and certifying these goods?—*A.*—I think they would certainly want a good deal of Government assistance.

Q.—I have in mind a case where a committee of merchants certify to the weave and quality of silk and gold thread. It was certainly their own idea and Government had nothing to do with it?—*A.*—Was that in India? If these people could do it, it would be an excellent thing. In the initial stages some Government backing would be required. You want Government to push them through.

Q.—Either Government could pass an Act and make people do it, and take a good deal of responsibility about it, or one or more Government officials might bring people together, talk the thing over with them, and put them in the way of doing it themselves. Do you think the latter idea possible; or do you think it should be the first?—*A.*—I think the first.

Q.—Then of course you have the difficulty that you will be passing legislation before you have consulted all the parties, and there would be considerable opposition when you passed the Act?—*A.*—In any case it would be optional for anybody to take advantage of this marking. All I have in my mind is optional marking.

Q.—Of course, this case I had in mind was optional; only the man who tries to sell without that certificate gets extremely low prices?—*A.*—It might be opposed, but I don't think there would be any honest opposition.

Q.—Has there been any attempt to work up a certifying system among themselves with the help of individual Government officers?—*A.*—They did propose it for silver work at Gujranwala. Nothing came of it. There was a distinct wish on the subject.

Q.—Has any attempt ever been made on the part of co-operative societies engaged in more or less artistic industries to get up some system of hall-marking?—*A.*—I have not heard of any such attempt.

Q.—Have you any co-operative artistic industries to which this system of marks would be applicable?—*A.*—There are none.

Hon'ble Mr. H. J. Maynard.—*Q.*—Didn't a Municipal Committee in some place certify certain articles, gold and silver wire work, either the Municipal Committee of Jullundur or Amritsar?—*A.*—I forget. I will get the case out and look the matter up.

Sir F. H. Stewart.—*Q.*—For what purpose was that; was it to certify the quality of the thread?—*Hon'ble Mr. H. J. Maynard.*—*A.*—For the purpose of certifying the quality of the goods, including the quality of the thread which may or may not be genuine.

Sir D. J. Tata.—*Q.*—In reply to question 4, you say, "A subsidy was promised to the Ambala Glass Works in 1911 on condition of training a certain number of apprentices, to be nominated by Government, in approved methods of glass-making. For the purposes of this training Austrian experts were to be entertained. The experts were entertained, but only for a short time; nobody replaced them; it was found that the apprentices were not properly taught; and in short the whole enterprise was a failure." What was the reason? Were they not good enough?—*A.*—I believe that one killed the other.

Q.—I heard somewhere that Japanese experts were brought in, but that they were not willing to teach people in this country.—*A.*—There are Japanese experts at Ambala. I have been all over the factory, but have seen no disposition to conceal their methods. They are really willing to teach.

Q.—We were told somewhere that Japanese experts did not like to show their methods to any of the apprentices?—*A.*—I have not heard that.

Q.—When you bring in experts, do you ever make a condition that they should teach all the people that are put under them for that purpose?—*A.*—What sort of experts?

Q.—Any kind, and for anything?—*A.*—I have not got any.

Q.—With reference to these Austrian experts, was any condition made with them?—*A.*—Not with them, but the proprietor of the factory who employed them.

Q.—Did he make conditions ?—*A.*—That is my impression.

Q.—If you make it a condition with any expert that he should teach, and if he did not succeed, his services should be dispensed with ; could an arrangement of that kind be come to ?—*A.*—I see no reason why it should not.

Q.—Our main object being to bring up our young men and make them help our industries, should not every attempt be made to train them in the proper way ? And if every expert is made to sign an agreement that he should teach, and if he fails to teach and instruct those under him, should he not be dismissed ?

Q.—In answer to question 29 you say, "I do not think a commercial museum would be of much practical use in this province. Prices are always fluctuating, and it would require good organization to keep the information at such a museum up-to-date." What is the primary use of a museum ; is it not just to open the eyes of people ? To a great extent it may be useful inasmuch as it shows people who visit it the various commodities that are made elsewhere or in this country ?—*A.*—Perhaps I was influenced by the word "commercial." A museum, such as you suggest, would be a good thing.

Q.—One witness told us that in Japan at every railway station of any importance there were show-cases put up, showing the commodities and articles that were manufactured in that place, and anybody passing through would see them. That had its uses, and all said it had done a good deal in developing the industries of Japan. That is the idea ; that plays the part that a museum would play in a small way ?—*A.*—Yes. There is something like that at present among metal workers who have stalls at some railway stations in this province.

Q.—In answer to Mr. Low you said something about a decorticating plant. Is there decorticating plant for cotton oil-seeds anywhere ?—*A.*—I do not think so.

Q.—With reference to hydro-electric schemes, the Punjab is an agricultural country ; has anyone's attention been drawn to the fact that an hydro-electric scheme would be very useful in drawing nitrogen from the air, producing nitrates for fertilizing purposes ?—*A.*—I have not heard that scheme advocated in the Punjab.

Q.—Perhaps where you have no industry your hydro-electric power might be utilised for drawing nitrogen from the air and supplying it to the agriculturist as a fertilizer. You know that Germany owes her position to her intensive agriculture by intensive manuring. Has any thought been given to that idea ?—*A.*—No, I see two criticisms of that idea :—one is that nitrates are not so valuable here, on account of the great extremes of temperature and, secondly, that hydro-electric power can be used for agricultural wells and raising sub-soil water. You save canal water, and the fact that the wells only work at the same intervals that the canal is working is no harm, because the peasant does not want water always.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—What becomes of the money brought into the province from the sale of produce ? Does it go direct to the cultivators, or to the money-lenders or shroffs ?—*A.*—No cultivator in this province deals direct with the buyer, but always with the middleman, and a good deal of the money sticks to the money-lenders.

Q.—He does not get much in cash : it goes to the middleman ?—*A.*—I would differentiate between the Canal colonies and the rest of the province. In the Canal colonies the cultivator gets a good deal of money.

Q.—What do they do with it ? Do they use it for improving their agriculture ?—*A.*—To a small extent ; but for the great part, they bury it.

Q.—Do you think the Land Alienation Act has diverted the money to these industries ?—*A.*—It has to some extent.

Q.—After all these bank failures, how is the money utilised—is it still going back to industries ?—*A.*—Very slowly.

Q.—With reference to your answer to question No. 3, you say, " These factories and presses nearly all belong to 'pool' now, and one or two factories have never been worked since their erection, and yet have proved fairly lucrative to their owners, thanks to the income from the 'pool.'" Has ginning proved lucrative to the owners ? We were told this morning that they did not get more than 3 % ?—*A.*—They did a few years ago.

Q.—But now there are too many ?—*A.* Yes.

Sir F. H. Stewart.—*Q.*—Would you support the proposal that a Government license should be required for ginning factories ?—*A.*—In this matter I should differentiate between factories already in existence, and those to be put up in future. It is emphatically a matter for consideration whether such licenses should not be required. We are imposing restrictions on factories. We also do not propose in the newly developing Lower Bari Doab Colony to sell too many sites, but only in proportion to the cotton to be ginned.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—To whom are you going to give preference, to cultivators or outsiders ?—*A.*—The cultivator has not asked for sites. If a co-operative society of cultivators wished to put up ginning factories, their application would be received most favourably. No co-operative society has yet put a ginning factory. If they did so, we would be glad to help them.

Q.—The sites are given to them ?—*A.*—Up to six months ago the sites were sold by auction to the highest bidder.

Q.—By selling sites at a higher price at auctions, don't you think a man will still raise his rates ?—*A.*—I cannot say that we are selling at a higher price than has been realised by auction.

Q.—Is it fair that "approved" parties only should be given a chance. By whom are these parties "approved"? Supposing a consumer comes and says, "I want to put up a ginning factory here." Do you think it right for Government to stop his ginning factory ; if he loses, that is his own concern ?—*A.*—If Government is of opinion that there will be more ginning factories in that place than the cotton produced, I think it perfectly right for Government to interfere.

Q.—Does the ginning owner knowingly go there ?—*A.*—Our experience is that in such cases they will form a pool. A pool has the monopoly. These factories have never worked, and the interest on the capital must be therefore paid by the cultivators.

Q.—Do you think that if there are only one or two men, they will be able to lower the prices ? My fear is that, suppose a foreigner comes here and has ginnings put up, he can take cotton away from the country, and the man who wants it will not get it ? - *A.*—We have no preference for foreigners.

Q.—You say that you give it to Ralli's without auction : that is preference over others, is it not ?—*A.*—Those who buy by auction are not bound by conditions ; those who pay a fixed price are.

Q.—If there is a pool and people are making money, do you think the cultivator is having more charges on his cotton by having more ginnings ?—*A.*—Undoubtedly I think so. Last year, until we had the first cotton auction in the Montgomery Colony, cotton was being bought by local ginnings at Rs. 10 and Rs. 12 a maund : at the auction, it fetched Rs. 17 a maund. This showed that the cultivators were not getting full price.

Q.—Is it not the reason that staple cotton has been lately grown, and that people are gradually coming to know of this.—*A.*—The local ginnings will not, unless they are forced, give full price for cotton.

Q.—Do you think by restricting ginnings you can benefit much ?—*A.*—I think so.

Hon'ble Mr. H. J. Maynard.—*Q.*—Is not all this land Crown land ?—*A.*—Yes.

Q.—Does that not create a special responsibility in Government as to the number of factories of particular kind that it brings into existence ?—*A.*—Yes.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Do you restrict the rates at which they should gin or press ?—*A.*—No. Suppose we find factories not giving cultivators the full price we get into touch with other firms and ask if they want to put up factories.

Q.—It comes to the same thing ; more factories and more competition ? With reference to the Salvation Army looms, were they of higher price than ordinary looms ?—*A.*—They were.

Q.—How much did they cost, Rs. 25 or Rs. 30 ?—*A.*—Rs. 80 to Rs. 120.

Q.—In answer to question 6, you say, "Far more Government control would be necessary if suggestions 3 and 6 in question 5 are followed than would be necessary in the case of the other suggestions." What more control do you wish Government should have ? Do you think they should have a Director on the Board ?—*A.*—Yes.

Q.—Or do you want the Government veto ?—*A.*—I have not thought out details.

Q.—In answer to question 38 you say, "Nothing came of the proposal on account of difficulties raised by the rules." What are those rules ?—*A.*—I really forget the facts of the case. I know that they raised a lot of difficulties in the matter. I got a lot of samples of penknives and penholders.

Q.—The difficulty is that they want to have the thing by order from the Stores Department ?—*A.*—This was raised some years ago before the war.

Q.—Then about this Land Acquisition Act. You were just answering Mr. Low's question that they will have hardship. You tell us that the Dhariwal Mills cannot get the land adjacent to them unless they pay fabulous prices ?—*A.*—Yes

Q.—Do you think the Dhariwal Mills is a concern for which the Government should acquire land?—*A.*—I do.

Q.—Is that for public purposes?—*A.*—The Dhariwal Mills bring a great deal of money into the neighbourhood. Such industries help the people and from that point of view they are in the public interest.

Q.—Then every industry is for the public purpose? My cotton factory in Bombay is also the same.—*A.*—Looking at it broadly, yes.

Q.—Don't you consider the case of the poor cultivator; it is his choice. The Dhariwal Mills can have the land at some other place or pay the price demanded. Why should you give them the land under the Land Acquisition Act?—*A.*—I do not agree with you that the Dhariwal Mills can go elsewhere; they cannot go miles away.

Q.—Don't they get the price that they want for their wool and cloth, then why should not the man who has land; why should he not also get the price he wants?—*A.*—That difficulty has been met by this Government. We have secured 5,000 acres for the expropriated peasants.

Q.—Suppose land is acquired for this purpose; don't you think there ought to be more safeguards in acquiring the land?—*A.*—I am quite prepared to have safeguards.

Q.—The man should also get his price, and if he does not want to sell, only in the case of a new industry in the country you should acquire the land.—*A.*—I want the man to get his full price, but not a fictitious value, just because his land happens to be near the Dhariwal Mills.

Q.—He has got the situation and wants his price. Then you say in answer to question 43, "I have before me as I write a record of a case in which a proposal to establish a large spinning and weaving mill in the Gurdaspur District came to nought, owing *inter alia* to difficulties in the way of acquiring land." What was that difficulty?—*A.*—My predecessors wished Government to acquire it under the Land Acquisition Act. Government said they could not do so, because it was not for public purposes.

Q.—Was that the only land?—*A.*—It was near water, and they could get water-power.

Q.—He could go down still further?—*A.*—It was also near a railway.

Q.—Then about the Board of Industries. Why was not a meeting called?—*A.*—I had too much to do. I am Director of Agriculture and also Controller of Munitions.

Q.—Was the constitution of the Board such that it was useless?—*A.*—It was rather too big.

Q.—What is the number?—*A.*—It is in the Appendix, I think.

Q.—How do the members come in?—*A.*—It was long before my time.

Q.—Are they appointed or elected?—*A.*—As a matter of fact the Board never came into existence: there was merely a proposal to appoint one.

Q.—You think the Board should be merely advisory, without executive functions? Suppose the Board of Industries meet, and if the Director wishes to carry out a certain thing; if the Board does not agree, then he can do what he likes. Is that your view?—*A.*—I think that in the first instance I should leave the actual decision in the hands of Government. I should tell the Board that Government would consider favourably any suggestions made by it up to a certain amount. I should like to make it clear that I do not want an official majority on the Board.

Q.—Have you got any Indian Chamber of Commerce here?—*A.*—The Punjab Chamber in Delhi.

Q.—Is that an elected body?—*A.*—I don't know, but it has not proved particularly useful.

Q.—What do you think ought to be the salary of the Director of Industries, if he is an expert?—*A.*—Rs. 1,500 up to Rs. 2,500.

Q.—About cottage industries; is the carpet industry thriving here much now?—*A.*—Not since the war started, because the American wealthy man is putting all his money into the War Loan in America.

Q.—What is the general average wage that a man in a carpet factory gets?—*A.*—They mostly work on piece work. There is one contractor who has 6 or 7 men working under him. A good man can get 12, 14 and 16 annas a day. It varies.

Q.—You have no Government technical institute here?—*A.*—No.

Q.—You don't think it necessary for this province?—*A.*—Not for this province alone,

Q.—You have got electric installation in many of your cities ?—*A.*—In Lahore and Amritsar.

Q.—Where do you get the men to work there ?—*A.*—They are Europeans.

Q.—I mean the assistants.—*A.*—They are trained locally.

Q.—And the motor mechanics : have you got any Punjabis as motor mechanics ?—*A.*—Yes.

Q —And the Assistant Engineers of the Public Works Department ?—*A.*—They mostly come from Roorkee. We have an Engineering College in this province which trains the lower grade Engineers.

Q.—In answer to question 95 you say, " This province can never, I think, be a great industrial province. The great reason militating against this is the scarcity of labour." Is labour very short ?—*A.*—Yes

Q.—Wages are not very high ?—*A.*—This province has no industrial traditions. Cawnpore has a very large factory population. People will come in and work for a short time. Coolies are now getting 12 annas a day. The great amount of land under cultivation is another reason. About labour, I have a note here about the Bhiwani Spinning Mills. The manager says labour is the chief difficulty ; there is very little local labour available there. Very recently Government has permitted a settlement of criminal tribes for work on mills There is one at Dhariwal. Last year they had some labour trouble at the Dhariwal Mills.

Q.—Do they work 24 hours ?—*A.*—No, they do not.

Q.—Don't they work by two shifts ?—*A.*—The mill works for 24 hours, but not the men.

Q.—Of course, you need more men for irrigation and such works, but if industries needed more, they won't go to the fields, but will come to the industries ?—*A.*—Yes, but you will not get a Sikh peasant, who has been brought up in the fields, to go and work in a factory, even if he got more money.

Q.—Then about the coal difficulty. Don't you think that owing to oil, the coal difficulty will be removed ?—*A.*—If the oil is successful. I have got a note about the oil that I will give the Commission. It is in the experimental stage.

Sir F. H. Stewart.—*Q.*—Is there any other point that you wish to remark on ?—*A.*—I would like to leave it on record that I do not agree with the views put forward by one witness as to the possibilities of the Punjab as a sugar-producing province.

Hon'ble Mr. H. J. Maynard.—*Q.*—About this question of grant of factory sites on special terms, there was a difference suggested between the foreigner and the non-foreigner. Has any such factory site actually been given to a foreigner ?—*A.*—No.

Q.—Have two been given to those who were not foreigners ?—*A.*—Yes.

Q.—As regards the Chamber of Commerce, there is one at Lahore and one at Amritsar ?—*A.*—Yes.

Q.—Did either of them, when there were great difficulties in regard to railway goods traffic in the Punjab—and we held meetings with the railway authorities to discuss the subject—did either of those Chambers of Commerce make any representation, or move at all in the matter ?—*A.*—No.

Q.—Do you know if one particular resident of Amritsar was asked if they could not be induced to move ?—*A.*—Yes.

Q.—Do you know what he said ?—*A.*—I don't remember.

Q.—Did you get the general impression that they were entirely apathetic in a matter affecting their own common interests ?—*A.*—Yes.

Sir F. H. Stewart.—*Q.*—Have you been in touch with the Queen Mary Technical Home at Bombay ?—*A.*—I have had correspondence with them.

Q.—With reference to suitable trades to teach the men ? A good many of them are from the Punjab ?—*A.*—I believe so. I have had correspondence with them.

Q.—Would you be able, when the men come home, to look after them ?—*A.*—We will do our best. A similar proposal has been put up to me in this province.

Sir D. J. Tata.—*Q.*—How many scholars do you send every year ?—*A.*—One every year. We have got the history here of five of them.

Q.—Have you any idea what previous experience these people had, for which they got scholarships. Was the man who was sent to study the cotton industry in a cotton mill previously ?—*A.*—His father had a cotton-ginning factory, but he was not in a cotton mill.

One gentleman is an Assistant Chemist, one is managing a tanning business in Bombay, another is managing a flour mill at Lyallpur; one man who was sent to study tanning came to grief. In one case this year we had selected paper-making, but Government said they would not send him unless he had had experience in a paper mill. We sent him to Lucknow.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Don't you think it would help students if after the examination they were to get at least one year's further scholarship so that they can be put into a factory and get a chance of learning the business? Don't you think it would benefit the students much more?—*A.*—I certainly think so.

Note by the Hon'ble Mr. H. J. Maynard, C.S.I., I.C.S., Financial Commissioner, Punjab on the Khaur Oil Spring, dated 12th October 1917.

WITHIN the area of some four square miles at Khaur for which the mining lease has been drafted, the Attock Oil-Company has "proved" something over half by sinking of wells at intervals. One good oil-bearing stratum exists at 400-500 feet, another at 1,200-1,600 feet. Some of the wells (five in all) tap the former, some the latter. The manager, Mr. Cameron, is confident that the area bounded by these wells will be rich in oil. He says that 2,000 wells might be sunk there. Let us halve this and say 1,000.

2. When last I spoke to Dr. Hayden, Director of Geology, on the subject, a year ago, he said that the prospects were promising. There was some little disappointment afterwards because a good deal of water is from time to time mixed with the oil. Apparently, this is a thing to which expert borers are accustomed. They deal with it by using cement in the borings in the water-bearing strata. The manager tells me he has refined small specimen quantities of crude oil and it contains 70 per cent. of kerosine—presumably a fair proportion.

3. The million gallon tank now has about 800,000 gallons of crude oil in it. It is useless for the company to attempt to extract more oil until arrangements can be made to refine it. The storage accommodation is very limited and there is no market for crude oil. In the meanwhile the expenses of a very large establishment mount up. The geologist, Mr. Pinford, receives a salary of Rs. 1,800 per mensem. There are four Californian borers who draw each Rs. 700 a month with Rs. 175 messing allowance. Much money has been locked up in plant and expensive boring tools (one of these weighs 11½ tons). The impression made upon me at my recent visit to Khaur (October 9th) is that the managing firm, Messrs. Steel Brothers of Rangoon (a well-known and influential firm) are prepared to spend money and to go on with the exploitation.

4. The crude oil contains a proportion of light oils with a low flash point which it is dangerous to use in locomotives (or perhaps for any other engines, though a certain amount is being used as fuel for pumping purposes at the oil-fields). A letter received from the Locomotive Superintendent, North-Western Railway, shows that nothing can be done as regards locomotives until arrangements can be made for refining.

5. A refinery is a very big business. The plant must be set up where there is plenty of water, and it would have to be either at Rawalpindi or Jhelum, with a pipe line the whole way from Khaur. The pipe line would cost 6 rupees per foot at peace prices and perhaps three times that amount now. The establishment would be anything up to 5,000 workmen. The manager said the cost might be as much as 50 lakhs. Let us halve that.

6. Short of a complete refinery, it might be possible to do something with what is called a "topping plant," to be erected locally. But this would not give any substantial relief to the fuel supply.

7. A 1,600-feet well may cost anything between half-a-lakh and 2½ lakhs, according to the character of the strata. Anyhow the expenditure on boring, say 100 wells, even if half of them tap the nearer of the two oil-bearing strata, must be put at about 30 lakhs.

8. Last year's railway difficulties show the great importance of a fuel supply alternative to Bengal coal. Moreover, a fuel supply is a necessity to anything like an industrial development for the province. I think it may quite fairly be said that the development of the Khaur oil-field (and possibly of other adjacent fields where oil has not yet been struck) is a matter of far more than local importance, and of some urgency.

Note on the effect of the Punjab Land Alienation Act XIII of 1900 by Mr. A. C. Badenoch, I.C.S., Assistant Commissioner, dated 9th February 1917.

IT is difficult to trace the action of the Alienation of Land Act on money-lenders' capital and savings. The material is very scanty. Income-tax figures, etc., depend on so many different factors that it is very unsafe to generalise.

Two sets of reports contain frequent references to the action of the above Act on redirecting capital—(1) Reports on the Administration of Civil Justice, and (2) Reports on the Land Alienation Act (discontinued from 1909 and replaced by the Land Administration Reports).

In the first set of reports the references are vague. The immediate effect of the Act was to make money-lenders, etc., wind up their dealings with agriculturists. The credit of the latter class was considered to have suffered and in the immediate years succeeding the passing of the Act there was a drop in suits brought by money-lenders against agriculturists, indicating a contraction in the advancing of money. In 1904, however, it was noticed by at least one Divisional Judge that money-lenders were accepting the security of houses and sites, rural or urban—the Act did not affect the village site. By 1905, arguing from and reduction in th number of suits brought by money-lenders against agriculturists from 105,958 in 1901 to 62,769 in 1905, the report went as far as to say "a reasonable inference that might be drawn from these figures is that the money-lender is finding new investment for his capital . . . . There must be obviously a large amount of capital diverted from its former uses which should now be available for investment in industrial and commercial undertakings, but there is nothing in District Reports to show that it is actually so employed." In 1906, it was definitely noted by one District Judge that money-lenders were then investing money in houses and factories, in preference to lending to agriculturists, and later reports repeat the same in more general and more emphatic terms.

The opinions expressed in the reports on the working of the Alienation of Land Act are more explicit. The immediate effect differed according to the class of *sahukar* (banker). The small *sahukar* dealt with the produce of the land rather than with the land itself. On him the Act had little effect. The wealthier *sahukar*, who dealt in money not in grain, found his operations restricted by the Act, and could not adequately recoup himself by increasing his rate of interest on loans which he would advance only on security such as jewellery, etc. This situation forced him more and more to devote his capital "to a more healthy and legitimate class of business in the direction of dealing wholesale and retail in food-stuffs and other commodities." The redirection was towards trade rather than industry, for the obvious reason that opportunities for investment in industry were very limited. The immediate effects were two-fold—(*a*) curtailment in the village of extravagent expenditure on ceremonies, and (*b*) reduction of profit in such trades as food and piece-goods. Thereafter, about 1905, it was noticed that *Banias* were lending more to industrial concerns and to contractors. The conclusions are that undoubtedly a large amount of capital had been released but that its diversion into industrial channels must necessarily be a somewhat slow process dependent on the field for investment.

The following figures are taken from reports on Joint Stock Companies :—

Year.	Number of new companies divided into shares which were instituted.	Number of companies limited by guarantee which were instituted.
1900-01	50	12
1901-02	51	11
1902-03	49	12
1903-04	57	13
1904-05	59	14
1905-06	68	15
1906-07	87	16
1907-08	96	18
1908-09	125	18
1909-10	136	22
1910-11	149	22
1911-12	194	23
1912-13	155	23
1913-14	146	24
1914-15	99	26
1915-16	88	26

The following figures are, however, still more instructive :—

Year.	Nominal capital in above companies.	Paid-up capital in above companies.
	Rs.	Rs.
1900-01	1,56,81,000	72,55,752
1901-02	1,58,96,000	79,34,487
1902-03	1,61,56,000	83,45,086
1903-04	1,80,89,000	89,14,099
1904-05	1,87,85,400	1,01,78,237
1905-06	2,02,75,400	1,06,32,154
1906-07	2,85,40,400	1,15,82,061
1907-08	3,36,54,000	1,39,25,753
1908-09	4,84,56,500	1,49,41,162

From 1909 issued capital is split up into two heads—(1) actually paid-up and (2) nominally paid-up :—

Year.	Nominal capital in above companies.	Paid-up capital in above companies.	
		Actually paid-up.	Nominally paid-up.
	Rs.	Rs.	Rs.
1909-10	5,88,01,000	1,72,06,667	1,79,84,590
1910-11	5,80,11,000	1,85,95,421	2,76,74,300
1911-12	6,22,81,940	1,94,37,219	2,90,55,015
1912-13	6,35,66,940	1,67,13,925	2,57,11,100
	54,71,000	32,43,441	36,35,700
1913-14	7,57,61,940	1,62,28,397	2,68,40,235
1914-15	4,42,56,940	1,49,69,032	2,14,08,305
1915-16	4,04,98,840	1,46,70,772	1,98,70,190

In 1912-13 the two sets of figures are for the Punjab proper and Delhi province.

The above figures would show that the number of companies (registered) and the invested capital increased largely after 1900, and fell off after 1913 on account of the banking and commercial crisis.

I have also examined the triennial returns of income-tax, particulary tax from companies and tax from bankers and money-lenders. Under both heads there is an increase in each triennial report, an increase however due to so many causes, that I do not think it worth consideration.

Such is the material available. Opinions given in response to personal enquiry are conflicting. A gentleman in Amritsar who goes in for dealing in house property informed me that while the *Bania* invests very largely his actual savings in house property his business capital goes into piece-goods and grain. An Indian auditor told me that his opinion was that the money-lender and the zemindar had readjusted their relations, but that the bulk of the *sahukar's* capital was still in land or the produce of land ; that, originally suspicious of the statutory forms of mortgage, he now accepted them freely. One's personal experience supports this to a certain extent. At the same time there is no doubt that the Act is frequently evaded, that though the land does not get into the money-lender's hands the produce of land does. At the same time I am convinced that the popularity of the People's Bank, etc., the cotton boom, and the over-capitalisation in cotton-ginning was very largely an indirect effect of the Land Alenation Act. It was in 1901 and 1902 that Swadeshi banking began to attain some considerable proportions. Cotton gins, ata mills, rice-husking mills are owned by the wealthy *sahukar*. The figures showing the number of, and capital invested in, register ed companies confirm one in this opinion.

My impression is that the crisis of 1913 has forced the *sahukar* back to the land, and to trade. He speculates in food-stuffs, urban real property, and lays up capital in stocks more than he did before.

Everyone agrees that there is a large surplus of money still awaiting investment. Barred by the Land Alienation Act from the land, there only remains to devise the means again to elicit it.

Note on the State Technical Scholars by Mr. A. C. Badenoch, Assistant Commissioner, dated 27th January 1917.

In this note are included those recent scholars who have returned to India after study. The statement as to Sheo Parshad is incomplete, and we have not been able to get the parentage with regard to No. (1) on the list.

The list and the remarks by me of the scholars themselves speak sufficiently.

Four out of the eight have passed into Government service. Of the others Nawab-ud-din has been a conspicuous failure up to date. Mohammad Amin has never put his training into practice, and conducts an ordinary cotton agency business for an alien firm. Lahori Mal Khosla finds that he has more knowledge than is necessary. Lakhmi Das Kochhar is the only hopeful case. So far he has done well as a manager of a tannery, but he is lost to the Punjab. One cannot really object to this, provided the Punjab's loss is really India's gain.

The general and strongest complaint is concerned chiefly with the impossibility of gaining practical experience in England. A three-years' apprenticeship would be of infinitely more service than a three-years' course. The scholarship in the first place does not provide sufficiently for both theoretical and practical training—it has never been held for more than four years. In the second place English firms refuse to part with their trade secrets to Indians. They were once generous to the Japanese. The advantage taken of this generosity by Japan has closed the doors of English factories to all Asiatics.

A few months ago a miserable Bengal State scholar begged from you employment; as you remarked "the frequent sad end of the State scholar." For the Punjab State scholar at present, besides Government employment, there are few openings. As a rule these men have no private capital, nor have they business belonging to their fathers which they can improve. No bank will give them money, and partners will not trust them. As far as the development of industry goes the results up to date are *nil*. Merely to send young men home and bring them back is to create more malcontents, since the treatment obtained socially in England is better than that in India.

My view is that if Government does not intend to do anything more for a State scholar, it must make an essential condition for a State scholar that he can command certain capital, or can enter a certain business.

Name of scholar.	Parentage.	Residence.	Caste.	Date of birth.	Educational attainments and practical training, if any, in subject for which scholarship was given and which he had before going to England.	Year in which scholarship given.	Time (in years and months) spent in England.	Institution in England in which studied.	Rough sketch of work done abroad.	History of scholar after return to India.	Any special remarks.
Indra Krishna, Kaul (Metal Work).	...	Lahore	Brahmin (Kashmiri Pandit).	October 1882.	Punjab B.A. Examination. Head Master, Hindu Technical Institute, Lahore. Licentiate Mechanical Engineer and Licentiate Electrical Engineer, Bombay Technical Institute.	1907 ...	3 years and 4 months.	Universities of Liverpool and London University College.	Bachelor of Engineering. Degree course at Liverpool University. B.Sc. degree course at London University.	Employed in Public Works Department in Roads and Buildings Branch from September 1910 to May 1916. Now in Bahawalpur State service as Electrical and Water Works Engineer at Rs. 750 per mensem with a yearly increment of Rs. 50.	
Sheikh Muhammad Amin (Textile Industry).	Sheikh Haji Muhammad.	Kasur	Sheikh	June 1884	Undergraduate from Forman Christian College, Lahore. Passed F.A. in 1906. Worked in his own ginning factory for two years as manager.	August 1908.	2 years and 2½ months.	The Manchester School of Technology.	Worked with Messrs. Suttcliff and Sons for two months after leaving the School.	Worked for about 6 months in Bombay in various mills for experience and practical knowledge and at his own factory up to 1912-13 when took a factory at Hardoi (near Lucknow) on lease and ran it for one year. Working his own factory at Kasur since then, and is in addition Managing Agent of the Japan Cotton Trading Company, Bombay.	As there was no field for Textile Industry in the Punjab, he took up cotton and has not thus been able to utilize knowledge gained in England. Found difficulty in England in getting practical experience. Mills not very ready to take him as an apprentice. Wants to start a mill in India but would like Government to audit his accounts and hallmark his balance sheet.
Sheo Parshad (Textile Industry).	...	...	Mehra	1881 ...	Undergraduate. Engaged in piece-goods at Delhi and had practical knowledge of textiles.	August 1908.	3 years ...	...	...	Textile Assistant to the Director of Agriculture and Industries, Punjab.	Died in 1914.
Nawab-ud-din	...	Amritsar	Khatik	1875 ...	Passed Middle School Examination. Translator in Chief Court, Punjab, for 2 years. Worked for 8 years in English Office at Gurdaspur. Practical work of 4 years in the tannery of his father. Science student in Government School, Amritsar.	August 1909.	3 years and 4 months.	Leather Sellers' Company's College, 176, Tower Bridge Road, Bermondsey, London.	After passing from the College worked in Neison and Company, Jullius Thomson and Company, Melhein Mar and Mauritius Factory. Also went to America and studied at New York.	Returning in 1912 was helped by Government to start an improved tannery in Amritsar. The business never promised well and finally partnership was dissolved by order of court. Nawab-ud-din then took post as Manager in Wazirabad. Proved unsatisfactory and was dismissed. Has now been lost sight of.	Enquiries have proved to me that Nawab-ud-din was deficient in practical capacity, and in business ability. He quarrelled with his partners, his employers, his workmen. He had not sufficient practical experience in European tanning methods, although he brought very good certificates from both England and America.

Name of scholar.	Parentage.	Residence.	Caste.	Date of birth.	Educational attainments and practical training, if any, in subject for which scholarship was given and which he had before going to England.	Year in which scholarship given.	Time (in years and months) spent in England.	Institution in England in which studied.	Rough sketch of work done abroad.	History of scholar after return to India.	Any special remarks.
Kashi Parshad Thukral (Textile Industry).	Lala Nanak Chand, Thukral.	Lahore	Arora, (Thukral).	28th August 1885.	F. Sc., Punjab University. Failed in B. Sc. Examination. Started hand-loom weaving factory in 1904 at Sialkot; together with this he was dealing in general commission agency and dealt also in different kinds of yarns, silks and cottons. Five years' practical experience before going to England.	1909 ...	2 years and 6 months.	Municipal School of Technology, Manchester. 4 months' practical work with Messrs. George Hattersley and Sons, Limited, Yorkshire. Also worked in a Mill at coloured weaving work, and for 3 months in Milan practical work in a sericulture mill.	In different branches of textile engineering, sericulture, cigarette-making industry.	From 1st January 1912 to 1st October 1914. Managing Director of K. P. Thukral and Company, Lahore, Hand-loom Factory, Machinery Importers, Commission Agents, and General Suppliers of all requisites in the Textile line. Now Textile Assistant to the Director of Agriculture and Industries from 1st October 1914.	
Hashmat Rai (Alkali manufacture).	Mehta Topan Dass.	Kahror Pakka, District Multan.	Hindu...	1st December 1886.	B. A., 1906 ... M. Sc. (Physics), 1908. M. Sc. (Chemistry), 1910.	1910...	2 years 6 months in England, 8 months in Ireland — 3 years and 2 months.	The Muspratt Laboratory of Physical and Electro-Chemistry University of Liverpool, Messrs. A. Friday & Co., Ltd., Soap, Candle and Glycerine Works, Belfast.	*Academic.* Advanced lectures on Electro Chemistry, Physical Chemistry and applied Electro-Chemistry. *Practical.* Inorganic Quantitative Physical Chemistry and Electro-Chemistry. *Research Work.* 1. Electrolysis of ammonium chloride solutions. 2. Catalytic reduction of cotton seed oil.	Was appointed Assistant Professor of Chemistry in the Government College, Lahore, before he left London.	Went home to study Alkali manufacture. He found it impossible to get practical knowledge of the manufacture. Brunner Mond would let him into their factory only if he gave an understanding never to go to India. He got into Finlay & Co. only after presenting them with the results of research, and giving an understanding not to do anything against the firm in the United Kingdom.

Lakhmi Das, Kochhar (Tanning).	Lala Bishambar Das, Kochhar, Pleader, Gujrat (Punjab).	Gujrat	Kochhar, Hindu Khatri.	September 1889.	B. A. Examination of the Punjab University in Economics, English, History and Applied Mathematics. Appeared in M. A., passed in 5 papers. Economics a special subject. Received practical training in banking and tanning before going to England.	1912...	4 years ...	Leather Sellers' Company's Technical College, 176, Tower Bridge, Bermondsey, London.	3. Catalytic bleaching of palm oil and tallow getting out, English patent No. 17784, 1913. 4. Preparation of nitrogen chloride by a new method. 5. Continuous supply of nitrogen, Laboratory method. 6. Working with Finlay's cell for electrolytic caustic soda and chlorine. 7. Practical experience in soap, candles and glycerine manufacture. Machine drawing and design. Spent 3 years in College, passing all examinations in first class and with honours in the City and Guild Institute, London. Received practical training in Germany and at Messrs. J. T. Hart and Sons, London, for 12 months.	Visited most of the tanneries in Bombay and the Punjab. Is working as Manager of the Poonawala Tannery, Dharaoi, Bombay, since 1st November 1916. Working at Army Leather.	*Remarks by Scholar.* I have specialised in the leather required for general Army equipment and accoutrement purposes. Since I returned to India I have had offers from various places and have been offered fixed salary and participation in profits.
Lauhori Mal, Khosla (Flour Milling).	Rai Bahadur Beli Ram, Seni or Assistant Surgeon (retired).	Lahore	Khatri	November 1890.	Studied up to F. Sc. and got training in the running and erection of flour mills for two years.	1913	2 years and 2 months.	(1) Hovis Mills, London. (2) Bulstowed & Pioneer Flour Mills, Wandsworth. (3) Polytechnics of Wesham and Manchester.	Practical work in the mills every day together with the bookkeeping and theoretical training in winter sessions at evening classes.	Started erecting a flour mill at Lyallpur but owing to disagreement gave it up. Now miller-in-charge of the Delhi Flour Mills Company under Mr. Bull; has remodelled the mill.	*Remarks by Scholar.* My western education has enabled me to put up and run a flour mill to the most up-to-date style. But the market requirements of India do not want so elaborate an arrangement as required in the west.

WITNESS No. 368.

MR. W. S. HAMILTON, I.C.S., *Deputy Commissioner, Karnal,*

WRITTEN EVIDENCE.

Financial assistance from Government.

My experience is that it is very difficult to induce Government to give any kind of financial aid to industries.

I can give three instances :—

(1) There was a sugar factory with modern machinery in Amritsar. The proprietor had not sufficient capital to improve his processes according to the advice of the Agricultural Chemist. I applied for a grant of Rs. 20,000 subject to conditions which would secure the improvement of the processes under the supervision of the Agricultural Chemist. Government refused all aid though the Government of India had made a special grant of Rs. 1,20,000 to the Local Government to be spent partly on the sugar industries and this was unspent.

(2) A man of good family with some capital, who had been trained in England as a Government scholar and has since been appointed textile expert under the Director of Industries, applied for a loan of Rs. 25,000 to be used in starting a handloom factory. It is pretty certain that the handloom weaver can survive only if he is organized in factories. Government refused the grant.

Both theso were sound projects.

(3) The Ambala Glass Factory was in 1911 given a grant of Rs. 5,000 per annum on the condition that they would employ a chemist and an expert (Austrian) blower and would train apprentices. This grant was not enjoyed as the European blower left the factory. The proposal was revived in 1915 but the Government of India then objected to the grant.

As the factory is probably the best glass factory in India and the competition is from Japan and enemy countries, there would seem to be every reason for giving assistance and none for refusing it.

2. There seems to be no reason why each of the methods of Government assistance mentioned in the Commission's question 1, 5, should not be adopted on different occasions. But there are political objections to Government subscribing capital whereby it makes it financially profitable to upset the Government and tempts to disloyalty. In all cases of Government financial aid, the Department of Industries should have a right of inspection through its experts and the aid should be liable to be withdrawn if the department is dissatisfied.

Pioneer factories.

Pioneer factories should be established, as only in them can the profitableness of a new industry be worked out in practice. The factories should be continued until the success or failure of the venture has been definitely ascertained. The Cotton Oil Factory in Cawnpore was disposed of prematurely. A pioneer factory, if a success, should be sold; it should never become a permanent Government enterprise except when the products are almost entirely consumed by Government.

A pioneer factory should be established at or near Rasul, where electric power and salt can be obtained cheap, for the manufacture by an electrolytic process of carbonate and caustic soda. This matter was investigated by Mr. Barnes, late Agricultural Chemist, in 1912 who recommended the project, provided an expert chemist who had seen the process (a modification of the Kastner-Kellner process) at work in America could be obtained. The capital necessary would be about 10 lakhs of rupees.

Other pioneer factories necessary are :—

(1) For pulping the spruce and fir of the high hills somewhere in the Himalayas by the riverside.

(2) For the utilization of bones.

(3) For cotton oil—I have tried to get a private capitalist to undertake this with a Government guarantee to purchase the oil cake, but without result.

(4) For making tinsel by the methods followed in France and Russia, the products of which have almost killed the indigenous industry.

There is absolutely no danger in the Punjab of Government pioneer factories discouraging private enterprise. There is no objection to subsidising an industry if it wil compete with an established external trade ; it is to kill the import of goods which can jus as well be manufactured in India that the pioneer factories are required.

No further industrial survey is required in the Punjab. We know the resources and the needs of the Province very well, what we require is capital in the hands of people with imagination, expert managers and honest workmen; and then we can develop those resources. Further surveys would merely delay practical work. Industrial surveys.

It is not the lack of primary education that hinders industrial development but the fact that the only kind of primary education available is one which spoils any boy for any kind of manual labour. The cleverer sons of artisans go to these primary schools and are lost to industry; the other boys are not educated at all. Effects of education.

There should be special elementary schools for artisans' boys in all towns. Just as for agriculturists we require village schools where the teaching will be by observation and practice not to any great extent by letters and figures, so for artisans' boys we require industrial schools where hand training will be from the beginning the main object, not memory training.

The three R's will be taught as part of the industry and just so far as they are a necessary part of the training of a good artisan. I attach a copy of a note which I wrote on industrial schools in 1911. During the last two years I have had experience of an industrial school on rather an ambitious scale at Gujranwala. The chief lesson learned there is that if we are to get artisans' boys into these schools we must begin with them from the earliest years. If we try to get artisans' boys of 10 or 12 years of age, who are able to read and write, we cannot find them. So we must take them younger and teach them reading and writing.

So far industrial schools have done little to improve the labourers' skill and efficiency. The reason is that the failure of the Indian artisan is a moral failure; he has little sense of honesty and aims only at making as much money as he can with the smallest effort. The teachers of our industrial schools must be men of high character who can inspire lofty ideals in their pupils. Industrial schools.

I regard industrial schools as the most important need of the present time. It is not a question of industrial schools *versus* apprenticeship. All artisans' boys should go to industrial schools; after the schools the boys should in some industries become apprentices.

Industrial schools should be under the Department of Industries not under the Education department, for only so can we ensure that they will not degenerate into mere factories of literates with a little manual training.

The provincial Department of Industries should consist of— Provincial organization.

1.	A senior member of the Indian Civil Service ...	Whole time.
2.	A chemist ...	Do.
3.	A mechanical and electrical engineer ...	Do.
4.	An inspector of industrial schools ...	Do.
5.	A business expert ...	Part time.
6.	A financial expert or banker ...	Do.

The director would be a member of the Indian Civil Service. It is absolutely essential that the head of a department of experts should not be an expert himself. This is the only way in which jealousies and one-sidedness can be kept out. In the Agricultural department we have ample experience to guide us. The chemist and engineer should be men of imagination with a practical bent. I have known two men who would both have been excellent men for the post of chemist—the late Mr. Barnes, Agricultural Chemist, and Professor Mouat Jones of the Government College, Lahore. The time of the business and financial experts could be paid for at so much a meeting, as is the practice in England.

The department or board should be an executive body with a large separate budget. They should have full power of giving grants for industrial projects up to the amounts available in their budget.

There should be no civilian control over the board except by the Lieutenant-Governor himself: the Director of Industries should act as a Secretary to Government in regard to the few questions which would have to go before Government. The reason I say this is that my experience as Director of Agriculture has shown me that civilian secretaries and under-secretaries cannot refrain from sitting in judgment on the proposals of experts as if they were qualified to criticise them and condemn them. As I have said in a letter "The day of the experts has set in and we civilians find it difficult to accommodate ourselves to the new conditions. In the Industrial department as in the Agricultural

department a large body of experts is required and their opinions must meet with far readier acceptance on the part of the civilian than is usual at present."

The functions of the Board of Industries would be to publish information of all kinds, to investigate the problems of all established industries and to give grants to enable workers to introduce improved methods.

Imperial Department of Industries.

There should be an Imperial Director of Industries assisted by two or more expert chemists and engineers.

This Director of Industries should be a business man on a footing of a Member of Council and should be independent of civilian control. He should have a considerable budget for experimental work, should investigate industries which are of more than provincial importance. He should have correspondents in all foreign countries whose goods are sent to India or to which Indian produce goes in quantities and he should keep the Imperial Government and also all provincial Directors informed of trade movements which are likely to affect India in any way. For instance with a Director of this sort we should have been informed in the year in which Russian barley failed (? 1911) that there was likely to be great demand for Punjab barley. As it was, we knew nothing of it till the buying began.

In the late Mr. Noël Paton, the Government of India had an ideal Director-General of Industries—a man of farseeing imagination who did not fear the drudgery of detailed investigation ; but he was written down a failure, solely because he was subordinate to the civilian element in the Government who refuse to give him responsibility to act independently of them.

I wrote two letters to the Punjab Government about the organization of an Industrial department :—

No. 1910 of 2nd August 1910.

No. 2793 of 11th September 1914.

I would ask that copies* of these should be obtained from the Punjab Government.

Cottage industries.

It does not appear necessary that there should be a separate department for cottage industries. The same department can assist them. In carpentry, iron work and weaving, it is education of a proper kind that is necessary. In weaving co-operative societies for the purchase of yarn and the sale of the finished products are needed as well as education. The tinsel industry must be organized in factories : at present the division of labour prevents all progress.

NOTE REGARDING INDUSTRIAL EDUCATION.

Scope of enquiry.

1. In this note I wish to detail the matters to be enquired into by the committee, which has been appointed to consider and report on the measures desirable for the furtherance of industrial education in the Punjab. The opinions expressed are mine and do not bind the other members of the committee in any way.

In the first place higher technical education, which may be defined as instruction in the principles of science and art applicable to industries, is outside discussion on this occasion. What we are concerned with is the training of handicraftsmen and artisan in better methods of workmanship and in higher notions of industrial rectitude and energy.

Resolutions of Industrial Conference.

2. The resolutions of the Industrial Conference of February 18th, 1911, were as follows :—

* * * * * * * *

"10. That the Conference, while recognising the value of the resolutions of the sub-committee quoted below, is of opinion that there has not been sufficient time in which to frame an adequate scheme of industrial education. It therefore recommends that Government should appoint a small committee which shall, after considering the resolutions passed by the sub-committee and after inviting opinions from persons competent to give them, frame a practical scheme of industrial education.

"The Conference further recommends that Government should inform the committee what funds will be available for industrial education in the near future in order that such a scheme may be prepared as may be introduced at once.

* Not printed.

Resolutions of sub-committee—

"(*i*) That industrial schools should be established at the centres of important industries where up-to-date methods (under expert management) especially applicable to the industries of that locality be taught—

(i) to boys and girls from five years old and upwards ;

(ii) also to adult men and women ; and

(iii) that to the more flourishing of such schools advanced classes of a more technical type be added, as occasion demands.

"(2) That the said schools should endeavour to train instructors, who could subsequently be employed in promoting the introduction of improved methods and appliances in trades carried on by artisans working in their own houses or in small workshops.

"(*ii*) For the schools contemplated in resolution 10 the proportion of working hours should be as follows :—

First stage.—$\frac{2}{3}$ general education and $\frac{1}{3}$ craft education.

Second stage.—$\frac{1}{2}$ general education and $\frac{1}{2}$ craft education.

Third stage.—$\frac{1}{3}$ general education and $\frac{2}{3}$ craft education.

"Provided that any boy if the Principal of the school so decides may devote the whole of his time to craft work.

"*Proviso I.*—These proportions should by no means apply to the adults mentioned in resolution 10 nor to the advanced classes mentioned therein, who would devote all their time to craft work.

"*Proviso II.*—'Physical drill' and 'Object lessons' as the expressions are understood in the Education department, should not be included in the proportion devoted to craft work.

"*Proviso III.*—For the purposes of this resolution literary education shall (apart from drawing and clay modelling and such practical instruction) be understood to mean only education in ordinary vernacular, reading, writing, arithmetic, and elementary geography (of India), and in the third stage a little English, comprising reading, writing and conversation so as to enable foreman's orders and instructions to be understood.

"(*iii*) There should be no restriction on the classes of boys admitted to the schools except that boys who are not the sons of artisans should be charged fees, which should be pitched low.

"(*iv*) That Government schools should not be conducted as workshops working for a profit, and that in any case, the products from such schools (if so conducted at all) should be sold to private orders and at prices which will not under-sell the general market.

"(*v*) That grants by Government to private industrial schools should be regulated by the efficiency of the schools and given under grant-in-aid rules and not according to the profit or loss being made by the schools, and that the grant-in-aid system requires further development.

"(*vi*) That the individual or body contributing the funds should manage the schools and that the functionary in immediate charge of each individual school should be a man who has received a technical education such as is contemplated by the schools now recommended, only to a higher and collegiate standard.

"For example, (*a*) a man might be sent for training at the expense of Government or of a local body to the Victoria Technical Institute, Bombay, the Roorkee College, or to the Serampur Weaving School, Bengal, or to other similar institution in India, or (*b*) it might be found more satisfactory to entertain such graduates of these institutions who had actual practical experience, or (*c*) even to entertain experts imported from foreign countries.

"11. That the industries in which schools are required are—

(1) Pottery ;

(2) Metal work including cutlery ;

(3) Wood work including carpentry and cabinet-making ;

(4) Cotton weaving ;

(5) Spinning and weaving of silk and wool ;

(6) Knitting and hosiery,
(7) Lace and drawn thread work, } particularly for women workers.

(8) Kandla and gold and silver lace work.

(9) Nickel-plating.

(10) Lacquer work.

"That it should be left to the Advisory Board to advise in what places the schools should be established.

"12. That industrial education should be administered by the Director of Industries and the Advisory Board assisted by an expert industrial inspector imported from Europe."

Indian conditions differ from Western.

3. Before going further, it is necessary to note that, whilst European and American experience of industrial education is of the utmost value to us, conditions in India differ in two very important respects. In the first place we have to inaugurate a system of education for a class which is almost entirely uneducated, whereas in Western countries trades schools are usually for those who have already obtained a general education and, secondly, we have the fact of caste and caste occupations. In the West carpentry and metal working and a little pottery have been adopted as the means of manual training: weaving has not been used, probably because handloom weavers are few. In India it would be taking the most difficult road if we tried to give weaver boys manual training through carpentry. Caste too would step in; and still more so in the converse case of training a carpenter by weaving. The easiest way is to give each class of artisan manual training by means of trade to which his parents belong, provided the processes of that trade are suitable instruments of education.

"Trade" schools, "Craft" schools, "Manual training," "Sloyd" schools—all have special connotations and we had better avoid these terms and call our schools simply "schools for artisans."

A cobweb.

4. There is another cobweb too which must be brushed aside. We are sometimes told that we cannot teach a trade except in a workshop, and that we cannot create an industry in a school. Both statements are true. We do not wish to create industries, and therefore we may have trade schools only for those trades, which are already established, and in those places which are the head-quarters of trades.

We are going to teach trades and therefore our schools must also be workshops. I shall return to the trades to be selected and the localities to be chosen later on; there are first some general principles to be noticed.

Only certain trades are educative.

5. Our schools are to teach manual dexterity in established trades. But intelligent manual dexterity cannot be acquired unless the intellect also is trained and character built up, and so our schools must be literary as well as manual, educational as well as instructive. This is a point which need not be laboured as the fallacy to be combated is the interpretation of education as synonymous with literary instruction, and no one desires to exclude literary instruction altogether from education.

Then again, the manual processes in some trades are suited to develop a boy's intellect and will, as well as to give him manual dexterity, while in other trades they are not. On the one side stand weaving, carpentry, metal work and some others in which the ordinary processes provide a very high training of mind, hand and eye, and compel them all to work together; on the other side comes a trade like tanning, the processes of which require little nicety of hand or eye and are hardly educative at all; in between lie pottery, gold-thread making, silk reeling which certainly demand touch and a sense of proportion, and can perhaps be used as a means of education, but afford much less variety of effort than carpentry and weaving. We cannot have trade schools in those trades of which the processes are not educative. Mere practice is not education, and must be acquired in factories; and if there are no existing factories, instruction in these trades must wait till commercial factories are established. So the trades, in connection with which we can have schools, appear to be weaving, pottery, carpentry, iron and brass work, gold thread making, and working. Whether there are any others or whether some in this list should be cut out as unsuitable is one of the questions that need an answer.

Locality of schools.

6. Now we can go on to consider where the schools should be. The answer depends on facts not on theories. The facts to be ascertained are (*a*) in what towns are there collected together the largest number of artisans of each trade? and (*b*) how far are the

artisans in those towns ready to send their boys to school? Probably enquiries will lead to a list of this sort :—

Carpentry schools.	Weaving schools.	Metal work schools.	Pottery schools.	Gold thread schools.
Jullundur.	Multan.	Panipat.	Gujranwala.	Delhi.
Hoshiarpur.	Jhang.	Rawalpindi.	Delhi.	Lahore.
Sialkot.	Kalabagh.	Wazirabad.		
Amritsar.	Lahore.			
Gujrat.	Khushab.			

Will boys go to the schools?

There is no use in blinding ourselves to the fact that in the beginning the greatest difficulty of all will be to induce parents to send their boys to the schools. They cannot be spared ; they are needed to mind the gluepot or to wind the pirns will be the answer. Or the old ways are better and we can teach them as much at home will be the retort of custom-bound incredulity, to which there is no reply but " Come and make trial." Even in Germany the local industries were at first opposed to the trade schools and resented any attempt to interfere with their methods of manufacture. Only later did they begin to recognize the advantages of the instruction afforded. With this warning before us and knowing the difficulties already experienced in the Punjab it is most necessary that each school should have a large artisan population to draw upon in the immediate neighbourhood.

Limit of cost.

7. But not only are we limited to the places where schools will be welcomed and boys will come to them ; we are also confined by the abilities of the public purse and the contributions of those who are willing to assist in the great work of education. It is quite certain that Government by itself will never be able to provide all the schools which are needed for the artisans of the province by birth or by choice. It is to be hoped that private generosity will come forward to assist, not only by giving contributions, but also by founding schools. There are indeed peculiar advantages in schools, which are also manufactories, being private institutions aided by Government grants. Muhammadans and Hindus alike are vitally interested, for while most artisans are Muhammadans or Sikhs, it is Hindu capital which lies unproductive because of the lack of capable, educated and honest labour.

The advantages of education.

8. The disbeliever or the scoffer may enquire what will be the good of educating the artisan. Probably it will be admitted that the curse of all Indian skilled labour—I do not include art workers—is its lack of conscientiousness. There is little pride in doing work as thoroughly and as quickly as it can be done ; but there is everywhere patent dishonesty in not working to sample, in passing off inferior material, in not devoting the time that has been paid for, in saving a shameful pice by misplaced putty, size or stuffing of some sort. The rickety chairs, the misshapen keys, the shoddy lungis all find their source in this moral defect. The Indian workman is quick with his fingers and can do wonders with the rudest of tools, and it is less his hand than his character that calls for education. An Indian in the coal mines turns out 100 tons of coal in the year while an Englishman can mine 268 tons and a German 370 tons : in the weaving mills in India it takes 5 or 6 men to do the work of one Lancashire operative, for in Lancashire a weaver looks after six looms and turns out 6 × 78 lbs. of cloth in a week, whereas in India a weaver can look after only one loom and turn out 70 lbs. of cloth. These moral defects make Indian labour expensive, though it is low paid ; but we hope to eradicate them by a suitable system of education It can be done by instilling method and working against time, by inculcating concentrated attention, by rewarding exactitude and honesty and punishing scamping, by insisting on perfection in the lower details before passing on to the higher, by teaching each boy to use his will as well as his hand, by showing through payment or promotion that good work pays.

Curriculum.

9. It is no easy matter to frame a curriculum which will accomplish this. It is because the work is so difficult that a committee has been appointed. We have at least models from India and elsewhere, where a similar plan has been tried, and we must select the best of each. But first let it be clearly understood that what we aim at is nothing very

novel; it is merely a system of elementary primary education suitable for artisans, which will fit them better to love and practise their craft, when they are grown to manhood, and not tend to lead them away from craftmanship to clerkship. A similar scheme of primary education for zamindars is no less necessary, but that is not our business.

Age of boys.

10. I propose that the boys should be at school from the age of 5 to 14 years. No shorter time will suffice for a thorough training of character; and by the end of this period the boy should be a skilled enough workman to be able to command good wages from private employers.

Details of instruction.

11. The instruction must include reading and writing in the vernacular and a small quantity of arithmetic but not beyond compound division, fractions and the rule of three. The sums should largely be in terms to be used in the trade—for instance, in weaving the length of hanks and knots, the yarn used for warps of a certain number of ends, the weight of yarn in relation to its count and so on. History is not required nor is geography except in its barest generalities to which actuality can be given on the map of the Punjab. A little natural history will widen the view and weaken superstition. Drawing is essential; and that and the practice of the trade should occupy more hours than all the rest together. I will return to these two branches later.

Hours of work.

12. The hours of work can be longer than in a purely literary school, as manual labour is not so exhausting as brain labour, and in any case the change from the one kind of occupation to the other affords a rest. I suggest the following time-table for boys from 8 to 14 :—

Reading in the mother tongue	6 hours a week.
Writing	2 „
Arithmetic	2 „
Geography and natural history	2 „
Manual employment	18 „
Drawing	6 „
Religious teaching, optional	½ hour a day.

Drawing.

13. Drawing is now generally regarded as the foundation of all manual training. Its value as a means of education is double in that it trains the eye to observe things accurately and it trains the fingers to be flexible and the hand to be ready and firm in the use of pencil or of tools. Moreover, the teaching of it can be begun at the very earliest age as there is no child that does not love the power of creation which lies in a pencil or coloured chalks and a piece of paper. Free arm drawing on a black board is a feature of many Frœbel institutions.

Drawing should be from real objects, from nature, not from copies. Geometrical drawing by eye, geometrical drawing with instruments, free hand drawing of flat objects and perspective drawing are all a necessary part of the education of every boy, but the importance of each will vary with the trade to be learned. The carpenter must be skilled in the use of the rule and in proportion; whilst the art of the potter requires facility in the free drawing of curves and in the designing of tiles and vases; and the weaver in the proportion which underlies all patterns in cloth. The objects to be drawn should be those which the boy has around him, but too early specialization should be awarded and only gradually will the models be confined to those which pertain to each boy's trade. But at the same time drawing and making should go hand-in-hand as the one interprets the other. The copying of drawing should be almost if not quite eliminated. Appendix X to the report on industrial education by Colonel Clibborn's committee is of value.

Methods of handicraft instruction.

14. As to the method of instruction in each handicraft it will be necessary to draw out a syllabus and course for each class of school. The Director of Public Instruction is arranging for a collection of models used in other schools and countries; and it will be the business of the committee to select and combine from the most suitable of these. For the smallest boys the training will be by Frœbel's methods, the basis of which is that the development of a child's mind depends upon arousing and directing voluntary activity. The teaching is teaching through play. As soon as the boys are able to handle their tools at all they will begin to make articles of use starting with the simple and easy and gradually working on to the complex and difficult. If the trade is carpentry the boys should not be allowed to cut purposeless squares of wood or make useless dovetails. Everything they work at should be a part of a whole, and they should carry through the work to the end. The end may be very simple, 4 square pieces of wood joined together to form a support for a flower pot or a plain box or, in a later year, a chair or table. Only by working

to an end can interest be kept up and intelligence aroused. Nothing could be more disheartening than the aimless chipping at pieces of wood destined for nothing but the rubbish heap, which now constitutes a considerable part of the carpentry teaching in our industrial schools. If the school is for weavers, the boys will begin on the simpler operations, the winding of bobbins and pirns, the assisting in warping and sizing, the mending of breaks in the warp. They will then weave plain narrow cloth on country loom, fly-shuttle loom and Salvation Army loom. Next they will go on to more and more elaborate patterns and finer materials, until they have mastered every branch of handloom weaving. Perhaps dyeing should be included; finishing certainly must be. Whatever the industry the success of the teaching will depend very greatly on the suitability of the detailed course which must be drawn up by the committee.

Instruction by classes.

15. Probably the boys should be divided into classes for ease of management: but it should be laid down that promotion from one class to another should not depend on time nor on literary qualifications, but should be given as soon as the boy has made each of the articles included in the course of the class up to the desired standard of workmanship. When a boy's manual dexterity either much exceeds or lags far behind his intellectual development, there will be difficulties of arrangement, but these are not insuperable.

Tools.

16. We all have an impulse to express admiration at the marvellous results achieved by many Indian workmen with the rudest tools, and there is a danger that we should regard the rudeness of the tools as being in itself an excellence. Certainly the merit of the worker stands out the more manifest, but the use of inefficient tools means, even for him, a loss of power and speed. There is nothing but gain in using the best tools which diminish the labour to be performed, increase the accuracy and the output of the work and last the longest. Supremacy of workmanship depends on excellence of tools. So in our schools only the most efficient European tools should be found. Firm handles, good steel, convenient shapes alone should be admitted. If they are imported wholesale, the extra cost will be trifling.

In schools of carpentry and metal-working we should have sawing and planing machines, as soon as the work done in the schools is such as can be more efficiently performed on them than with hand tools. Similarly in weaving schools labour-saving machines will often be required.

Boys to earn by their work.

17. Whatever the boys make should be their property and should be sold for their benefit; they should get the price realized less the cost of the raw materials. This personal interest in the works of their hands will induce them to labour their best, will encourage rivalry, and will also teach them something of the market and the public demand. They would of course have their own accounts and enter up the profit and loss of each individual article. Whether the money should be drawn term by term or accumulated till a boy leaves the school is a matter for discussion. A large accumulation might tempt a parent to remove the boy. An important side consideration is that boys are likely to remain on longer at school with their parents' consent if they are earning wages.

Sale of articles made.

18. A certain amount of difficulty in selling the articles made may be anticipated. If the schools were to compete in the market with the parents of the boys whom we wish to attract, disaster would be certain. On the other hand, the success of the schools depends largely on finding a good market, so that the labour may be remunerative. I think the difficulty can best be surmounted by taking orders through the local artisans or wholesale dealers. Flourishing private businesses would often be able to undertake much more work than otherwise, if they could pass some of their orders on to the school for execution. The independent firms will then secure to themselves the retail profit; but the schools will probably be sufficiently independent to save themselves from being sweated.

Fees and scholarships.

19. In the beginning at least the sons of artisans should be charged no fees. But scholarships will be unnecessary, for the price received for the articles made should after the first few years be of more value than a scholarship.

From the sons of other than artisans I think small fees should be taken, not because we wish to discourage such from coming to these schools, but because they can usually afford to pay and we do not wish to attract them by the comparative cheapness of the schools.

Teachers.

20. Probably the greatest difficulty in introducing any form of industrial education, which will be of real use, is to find the teachers. The fact, never to be lost sight of, is that manual instruction is to be used not merely to train the fingers, but as an instrument for the shaping and development of character. To quote from the report of the Commissioners from New South Wales on technical teaching. (Report of 1905, Chapter I, paragraph 9) :—" It is required in educative manual training and Sloyd that the instruction must be *systematic* and must be given by a special teacher, who is an educationist and not

merely an artisan or good workman."....." An instructor in 'fitting or turning' ought to be something more than a good fitter and turner. Besides being an expert workman, he should be theoretically well-informed in his own sphere of work and everything relating thereto : he should have some knowledge of educational principles ; should understand the far-reaching aims of educational systems, *viz.*, those which touch the question of character, the building up of national efficiency, the creation of a class of workmen who will be enthusiastic as to the quality of their own handiwork." We cannot expect this of the Indian mistri, however good he may be. He may be able to teach the handy use of the chisel or the shuttle, but he cannot inculcate the love of truth, and the virtue of precision and the satisfaction of persistent application. He has not learned it himself ; so how could he ? Nor would a mistri working under a headmaster such as we now find in most primary or middle schools be more successful. The latter would have little appreciation of or sympathy with manual labour as an instrument of character building ; and even if he had that rare gift of symapthy how could he inspire his own enthusiasm into the teaching of another ? My own opinion is that the only suitable head for our schools will be found from among the well-educated superior artisans of England. They have gone through the mill of technical education themselves ; they know the value of hard work, and they are made up of that thoroughness which is most wanting in the Indian artisan. But then these men would cost Rs. 200 a month and would at first be ignorant of the vernacular tongue and of Indian prejudices. Missionary bodies are fortunate, and perhaps are for this very reason more successful in industrial education than others, because they can obtain artisans of this sort ; who have all the greater educative influence because they deliberately devote themselves to the bettering of their fellows, and only through that look for a livelihood for themselves. Would it be too much to spend Rs. 19,200 a year on European headmasters of 8 schools for artisans, when the Punjab contains some 80,422 carpenters, 51,743 iron-workers, 766,687 weavers, 79,174 potters and 9,122 gold thread workers on whose education practically nothing has yet been spent ? Failing a European artisan headmaster for each school, it might be possible to find a few suitable Indians trained in some of the Indian Technical Institutes. But certainly an English artisan inspector, who could visit each school within every few weeks, would be indispensable.

Control.

21. As to the control of the schools I am strongly of opinion that it should not be vested solely in the present Department of Education. I do not wish to express distrust of individual members of that department ; but I do fear very greatly the uncontrolled supremacy of the ideals of the department. A man cannot serve two masters, and those whose whole interests are bound up with literary education will never give manual training a fair chance. Moreover, practical difficulties would arise owing to the impossibility of employing the subordinate staff of the Education Department in these industrial schools. If there were a separate Director of Industries for the Punjab, he would be the man to be in control. But the present combined Director of Agriculture and Industries is already over-burdened with work. I can only suggest that there should be a separate Board comprising the Director of Public Instruction, the Director of Industries and one or two non-officials in each town to control these schools.

Existing industrial schools.

22. Most of the existing schools are of little use. The best, such as the Lahore railway school, might be made much more useful by complete and radical reform of the schemes of work ; many might well be closed.

ORAL EVIDENCE, 10TH DECEMBER 1917.

Sir F. H. Stewart.—*Q.*—I understand you preceded Mr. Townsend as Director of Industries ; how long did you hold that appointment ?—*A.*—I was for 3½ years Director of both Agriculture and Industries, and was a great deal longer Director of Industries, about 5 or 6 years.

Q.—You give in your evidence instances in which Government help was refused : can you also give us the reasons why that help was refused ?—*A.*—In the first case the Government said that the man must improve the processes and then get the grant : I said that the grant should come first as the proprietor had not money to improve the processes without a Government grant.

Q.—Was he a substantial man ?—*A.*—Not very substantial financially.

Q.—Had this fact a certain bearing on the proposal ?—*A.*—Undoubtedly.

Q.—Did this case arise after an unfortunate experience in another province ?—*A.*—I do not think there had been any other just at that time.

Q.—What date was it ?—*A.*—That was in 1913.

Q.—What happened to the factory ?—*A.*—It failed. They worked only for a short time, they could not obtain cane at reasonable prices,

Q.—With reference to the next case, that is, the man who wanted to start a handloom factory, what happened?—*A.*—It was simply this. The house which the man offered as security was estimated by the Public Works Department to be worth a few hundred rupees less than the amount of the loan. I think Government really took advantage of that. There was no very real reason for refusing the loan: the man had very strong personal security, he has got a brother an Extra Assistant Commissioner who would have given full security for the man.

Q.—That man has since been appointed to a Government billet?—*A.*—Yes.

Q.—Is he doing useful work?—*A.*—I think so. Mr. Townsend will know about that more definitely than I.

Q.—Then in the case of the Ambala glass factory why was assistance refused?—*A.*—The Punjab Government sanctioned a yearly grant on condition that apprentices were trained, but the Austrian blower would not teach apprentices and asked for a rise of pay which the proprietor would not give; so he went away. That was only professional jealousy.

Q.—Then was the factory shut down?—*A.*—No. The Punjab Government did not refuse the grant, they sanctioned it originally. But subsequently when the proposal was revived by the Punjab Government the Government of India refused the grant.

Q.—But the proprietor of the factory was a rich enough man to put in the money himself, was he not?—*A.*—He was not at all successful in those days. I do not know whether he is really a rich man; of course he owns a flour mill and is the managing director of a bank and has got a certain amount of money.

Q.—In this case Government assistance was really provided in order to train apprentices, was it not, and the apprentices were not trained?—*A.*—Not quite. The grant was given in order to assist a struggling industry: the condition about apprentices was really introduced in order to bring the grant within what was then the policy of the Government of India regarding industrial grants.

Q.—You refer to the constitution of the Department of Industries and its several experts: would these experts be attached permanently to the Provincial Industries Department, or would they be borrowed from the Imperial Department?—*A.*—I think we should have provincial experts. Of course there is no reason why we should not also borrow. You cannot get a chemist who is an expert in all industries. So in many cases the provincial department would have to borrow the services of the Imperial chemists.

Q.—Could you afford a sufficient staff of experts in each province, or you would have experts only for the major provinces?—*A.*—My experience is that a good chemist can give a great deal of assistance in very many industries of which he has not perhaps first-hand practical knowledge: I mean a man like Mr. Barnes as I have said later on; he is the sort of man who could help any industry although he is not an industrial chemist in any particular industry; but he could give a great deal of help in many cases.

Q.—About pioneer factories you say that they should be sold if a success. You say also that the cotton-seed oil factory in Cawnpore was disposed of prematurely: has it since proved a success?—*A.*—I believe it has.

Q.—Government in that instance worked through a local firm, that is, the firm managed, was it not?—*A.*—Yes.

Q.—Would you recommend that procedure as a rule?—*A.*—Yes, certainly if you could get a local firm. But in the Punjab we have got practically no European industrial firms.

Q.—Who would manage such pioneer enterprises if you started the factories in the Punjab?—*A.*—The difficulty is to find and maintain your European; you have to import your European as a rule; for instance the proposed soda factory would certainly have to import an expert chemist. I think you would very seldom be able to find a man in the Punjab.

Q.—Supposing you have got a firm to manage such a factory, would you give that firm the first option of taking it over?—*A.*—Certainly.

Q.—Then with reference to the manufacture of carbonate of soda by electrolytic process at or near Rasul, you say that the capital required for a pioneer factory for that industry would be 10 lakhs of rupees; is it your idea that Government should find that capital?—*A.*—Government may have to find a great deal of it. Capital will not come forward for new industries of that sort in the Punjab.

Q.—Supposing that one of these pioneer factories was successfully established, would you give the firm which would manage it the first option of taking it over? or would you dispose of it by private treaty or by public auction?—*A.*—I do not think that matters. If you could not get rid of it at a suitable price, you would have to go on running it. Of course it is assumed that it is successful; if it is unsuccessful, you would have to close it.

Q.—With reference to your cotton-seed oil project, you say you tried to get a private capitalist to take this up, but there was no result : who was it who would not see the thing through, was it the Government or the private capitalist ?—*A.*—Government made a good offer to buy up all the cake and I sounded a number of people who had cotton-ginning factories and others, but there was no response. They anticipated difficulty about marketing the oil more than the cake. I understand that the marketing of the oil is not difficult in other provinces.

Q.—With regard to industrial schools, you would put them under the Industrial Department ?—*A.*—Yes.

Q.—The Punjabis have a distinct taste for mechanics ?—*A.*—Yes.

Q.—Do you think that that taste would develop into ability in the higher branches of Engineering ?—*A.*—It is all a question of education. They have very good fingers, but they have not the brains.

Q.—Your idea is that you should catch the boys really young, teach them the three R's and then apprentice them ? *A.*—Yes, after a course of schooling they should be put into works.

Q.—Then you can give them further theoretical training after schooling ?—*A.*—Yes.

Q.—With reference to your proposal for a Provincial Department of Industries, you say that the Director should be a senior member of the Indian Civil Service ; that is presumably of course he will be acquainted with local conditions and yet will not be influenced at all by local interests ?—*A.*—Yes.

Q.—Do you think you could get a senior civilian to accept such an appointment ?—*A.* I do not see why you could not. He would be of the same status as the Director of Agriculture.

Q.—But continuity of service would be very important, don't you think so ?—*A.*—Very.

Q.—Would it be worth the while of a senior civilian to take up such an appointment and stay in it for a number of years ?—*A.*—I think a man with 15 or 18 years' service should be quite willing to take it up.

Q.—Would you give such a man a higher pay than he would get in the normal grade of his service ?—*A.*—You would have to give him about the same pay as the Director of Agriculture : he would get an allowance.

Q.—What is the business expert ?—*A.*—Well, our notable business expert was Lala Harkishan Lal. He would be a man, for instance, like Lala Panna Lal, the headman of the Ambala glass works, a man who is in touch with the capital of the province such as it is.

Q.—Do you think that a Department like this should include, say, the Inspector of Industrial Schools which is a new appointment which you recommend, the man being brought out from home ?—*A.*—Yes.

Q.—The inspection of these industrial schools would be one of the principal difficulties in putting them under the Industrial Department ?—*A.*—At the present time we have got a man in the Punjab who would do admirably. Mr. Heath of the Mayo School of Art is the sort of man I have in mind.

Q.—And then you would say that this Department should be executive : do you mean the Director or the whole board ?—*A.*—They think the Board should sit on any proposal to give assistance to a factory or to start a factory. Their recommendation should go to the Government through the Director. It would be a recommendation by the Board, not by the Director himself.

Q.—Suppose there was a difference of opinion between the Director and the Board ? *A.*—There might certainly be a recommendation made by the Director but if it was not supported by the Board it would not carry much weight.

Q.—Then you would give this Board several lakhs of rupees annually to spend ?—*A.*—I should think so.

Q.—You think the amount must be really adequate for the Department to do any real good ?—*A.*—Yes, there is no use giving small amounts.

Q.—Would you impose any limitation on the amount of money which they might earmark for any particular project ? Supposing they had two lakhs or three lakhs in the budget for the year, you would not allow the Board to spend as much as they wished out of it on a particular project without further reference to Government ?—*A.*—I would lay down rules for that, limiting them to a certain extent.

Q.—Then when you come to the Imperial Department you think that the head should be a businessman ?—*A.*—Yes.

Q.—Do you think there is need for having an Imperial official purely for industries ?—*A.*—Well, I think the Member for Commerce and Industry has not fulfilled the purposes for which he was created. It was originally intended I think that he should be a businessman and gradually it has come into the control of civilians.

Q.—Do you think it would be a good thing if the Imperial Department had a staff of experts under its own control to be loaned out to the different provinces ?—*A.*—Yes.

Q.—Do you contemplate that ?—*A.*—Yes.

Q.—Then it would have to be assisted by more than two ?—*A.*—Probably.

Mr. C. E. Low.—*Q.*—In any of the three instances which you give showing where Government declined to give financial assistance or where the proposed grant fell through, were the proposals supported by expert advice of the type which would justify an ordinary businessman putting his money into it ?—*A.*—No, I do not think so. Mr. Barnes saw this sugar factory several times and he pointed out the defects, and said till these defects were remedied the factory could not be worked as a business proposition.

Q.—Mr. Barnes, though a man of conspicuous ability as an industrial chemist, was not a sugar factory expert ?—*A.*—No, but he was more of an expert in sugar manufacture than in almost any other industrial process.

Q.—He would not know much about the chemical engineering side of it ?—*A.*—No.

Q.—In all these Government attempts to help industries, either to give financial assistance or to get them to start on their own, has not the weak spot always been the lack of adequate expert backing ?—*A.*—Undoubtedly.

Q.—Without which no convincing proposals can be made ? You understand Government, especially the Finance Branch of it, look at industrial proposals very much in the same way as a private individual would if he were asked to put his money into a concern. Suppose for instance a mining project was put on the market and the prospectors included the name of a chemist and not of competent consulting or mining engineer ?—*A.*—Undoubtedly I think there is weakness of expert advice.

Q.—Have you any idea as to the cost of power in this proposed caustic soda factory near Rasul ?—*A.*—I do not now remember what the canal authorities asked for, but it was absolutely prohibitive.

Q.—During your time in charge of the Agricultural Department was there any mill here actually producing cotton oil and cake ?—*A.*—Yes, there was one in Lahore. It has gone into liquidation as I saw in the papers the other day. It was not devoted solely to cotton oil and cake, but included many other enterprises.

Q.—Has the question of popularising the use of mill-made cotton oil cake ever been before you as Director of Industries ?—*A.*—I have distributed a great deal of cotton cake to different markets but without success. I tried also when a new factory on the Bombay side was started. I wrote to it for a quotation, but the railway rates were prohibitive.

Q.—You never tried the method of demonstration in the same way as you demonstrate your agricultural products which you are pushing ?—*A.*—No, I never tried it at exhibitions or anything of that sort.

Q.—Are your agricultural assistants asked to demonstrate the use of factory-made oil cake ?—*A.*—Not in popularising it. The difficulty is perhaps the railway.

Q.—Quite so, but supposing you got a mill started here, the mill must see its way to sell the cake ?—*A.*—Yes.

Q.—And it would be difficult to take the cake to Bombay and sell it there : You must have a local market ?—*A.*—We must have a local market. But the conditions are different in the Punjab where we consume all our cotton seed and import more. Therefore if you start a factory it must temporarily raise the price of cotton seed against itself. Of course ultimately the establishment of a factory will cheapen cake.

Q.—What about your other oilseeds, toria, sesamum and so on ? Are any of these made into mill cake locally ?—*A.*—Yes.

Q.—How do they sell ?—*A.*—They sell freely. There is no feeling against them now-a-days.

Q.—They are taken by the cultivators for milch cattle and so on ?—*A.*—Yes.

Q.—Well, the only thing they are sticky about is the cotton cake ?—*A.*—Yes, at present they prefer cotton seed as cattle food.

Q.—Somewhat further south in India where they grow very large quantities of cotton I could imagine the position is the same as you describe it here. You don't grow a large

amount, you import: they grow a very great deal of cotton seed and they consume most of it locally ?—*A.*—Cotton seed is cheaper everywhere else than in the Punjab.

Q.—Is it particularly dear ?—*A.*—Yes, because of the large demand for it for food.

Sir D. J. Tata—Q.—May I ask whether this cotton seed is imported for cattle food ?—*A.*—Yes.

Mr. C. E. Low—Q.—With reference to your proposal regarding industrial schools, unless you teach them to produce articles for which there is a demand by methods superior to the bazar methods, there is no prospect of success, is it not ?—*A.*—Yes. It is no good teaching them bazar methods.

Q.—It is a common complaint against industrial schools and the methods followed by them that they simply teach the boys exactly what they can learn in the bazar, and they probably do it quite so well ?—*A.*—Quite so.

Q.—How would you propose to improve those methods ?—*A.*—I do not think it is so much the actual manual methods which have to be improved as the moral character of the worker. He takes no pride in his work; for instance, if he spoils a joint instead of using a fresh piece of wood he puts in putty; it is that sort of thing you have got to root out more than anything else.

Q.—I will come back to that later. You do regard it as a matter of considerable importance to teach them methods superior to ordinary bazar methods ?—*A.*—Undoubtedly.

Q.—How do you propose to work out those methods ?—*A.*—Well, as I said just now, it is merely a question of character. The ordinary Indian carpenter, for instance, is probably better with his fingers than the ordinary English carpenter. He can do everything with his fingers, he is very efficient with his tools; so it is not his methods that have got to be improved, it is his honesty. Of course when we come to more elaborate things we have got to introduce improved machinery undoubtedly.

Q.—I can only speak from my experience of one industrial school, but we did find in that case that the ability to teach methods superior to the bazar methods had a tremendous moral effect on the boys and on their parents ?—*A.*—The important thing is to find a teacher of higher attainments to improve both manual work and character.

Q.—Do you think that a man of that sort could be obtained who would also have the ability to work out methods superior to bazar ones ?—*A.*—Yes.

Q.—And competent to teach these people ?—*A.*—I thinks so.

Q.—And you make certain definite suggestions which on the whole coincide with my experience in one particular case as to the type of man you have to get ?—*A.*—I propose a European artisan one imbued with the missionary spirit.

Q.—Well-educated superior artisans in England who have had technical education themselves: but they would cost more than Rs. 200 a month; a man of that sort could get at least Rs. 600 in a railway workshop, and he would not come on to a Government job on Rs. 200 a month ?—*A.*—You get the class of European in the Horticultural service; that class of men get about Rs. 200 or 250 initial. I think that is what he starts with.

Q.—Usually these people get a number of allowances ?—*A.*—They get a certain number of allowances, but they start on about Rs. 200. They are the same class of men as the artisan we want.

Q.—If you get him you can give him improved prospects ?—*A.*—Yes, undoubtedly.

Q.—But in this question of schools you say in our schools only the most efficient tools should be found, and then you go on to say in paragraph 16 "in schools of carpentry and metal working we should have sawing and planing machines as soon as the work done in the schools is such as can be more efficiently performed by these than with hand tools," how are the boys going to get hold of these things when they leave ?—*A.*—They may not be able to get hold of these if they work in their own houses; but, on the other hand, there are factories also.

Q.—I am not quite clear what you have in your mind: do you want a person to teach the cottage worker or the man who is going to take a place in an organised industry ?—*A.*—At present practically all the carpentry work is a cottage industry in the Punjab; but there is no harm in a man being trained in the use of machine tools: he will be quicker and more efficient by being able to work them. There are a certain number of machine tools in the province, in Ambala there is a carriage factory in which machine tools are used, and there are other places.

Q.—You get a man to learn to use a mortising tool or something of that sort, costing 90 rupees or so, or you teach a boy who is going to be a blacksmith how to use a small hand forge costing about 200 rupees; well as long as he works as a cottage worker, will he be in

a position to buy these things?—*A.*—The Punjabi artisans are well off and earn high wages and many of them could buy these tools.

Q.—Do you think any specific attempt ought to be made to find a means of giving them capital either by a system of deferred pay or something of that sort?—*A.*—I think it would be a very good thing to introduce a plan of that sort, but of course carpenters with improved tools could make earnings very rapidly.

Q.—Then you think they will derive distinct advantages by learning to use machine tools too?—*A.*—I suppose a great many of them would not take to machine tools, but I do not think it would be any harm if a certain proportion of them, that is, the best men, learn the use of machine tools, so that they may be enabled to get better employment. I suppose gradually the cottage worker will have to give place to works in factories.

Q.—I do not think it is at all necessary in the case of blacksmiths and carpenters. Even in most highly organised countries they have their village blacksmiths and village carpenters?—*A.*—Such village blacksmiths and carpenters are a very small proportion of the total in England, but here it is 100 per cent. nearly.

Q.—But still very few of the villages have more than one village blacksmith or village carpenter. Is there any complaint that the village artisan of the cottage type is deserting his village for the town?—*A.*—I do not think so.

Q.—Turning to another matter, you object to what I may call non-expert noting in the Secretariats on proposals from expert departments. I think the Director of Agriculture will not be found usually to be an expert being generally a Civilian? Also you don't mean to object to criticism in the Finance Department?—*A.*—Of course not, there must be financial control undoubtedly, but projects ought not to be rejected on the ground that they are technically unsound.

Q.—Have you had any experience of agricultural pumping, power pumping with small power plant for irrigation?—*A.*—We have a plant in Gurdaspur. There is one in my present district of Karnal.

Q.—Are the people working it well?—*A.*—Yes; the owner told me he made 25,000 rupees in the first year by breaking up and irrigating new land.

Q.—What horse-power was it?—*A.*—I do not know about the power. It is an Ashford tube well and a steam engine.

Q.—Do you know if these pumps are at all numerous?—*A.*—There have been very many tube wells put down. I have had personal experience of a good many; they nearly always fail because the owner of the plant has not a sufficiently large area of land under his control. Also reliable mistries are hard to get.

Q.—In other provinces they get hold of the ordinary intelligent coolie for 8 rupees a month, pay him say Rs. 12, teach him to run an oil engine, thus hundreds are being worked in other parts of India?—*A.*—I know the mistries ought not to be a difficulty. But they do spoil the pumps and engines. There is a pump and oil engine in the hospital in Karnal which have been irreparably spoiled in 3 years.

Q.—Have you no department of Government like the Pumping and Boring Department of Madras to advise you? Have you no agricultural engineers?—*A.*—I had no personal experience of working with an agricultural engineer. An agricultural engineer was appointed just when I ceased to be Director. It took 3 years' correspondence to get him appointed.

Q.—Would you keep a man like that under the Agricultural Department or under the Industrial Department?—*A.*—I think under the Agricultural Department.

Q.—Even when you get a good Industrial Department going?—*A.*—I think I would keep him under the Agricultural Department. I do not think it is a matter of very great importance, but I think the Agricultural Department to be the more important.

Q.—But these failures which you mention occurred owing to the man not adjusting his power to his land, the use of unsuitable type of power, unsuitable with reference to the lift and the volume of delivery or something of that sort: was the agricultural engineer in existence at that time and was he advising people?—*A.*—That is exactly what I mean, they put down pumps each capable of irrigating 200 acres, but they had only 50 acres there. That was the reason why the plant did not succeed.

Q.—Is it not the duty of the agricultural engineer to advise?—*A.*—Undoubtedly. I think they had unsuitable pumps.

Q.—Is anything of that sort run on co-operative lines?—*A.*—No.

Q.—Do you think there is any scope for that?—*A.*—Well, it would have to be run on co-operative lines if it is to be introduced into a district where the holdings are small and

where cultivation has reached its limit. In a district like Jullundur it will have to be done on co-operative lines. There is no other way of distributing the water raised by a big central pump.

Hon'ble Mr. H. J. Maynard.—*Q.*—Is there not an American Mission School at Gujranwala which is an industrial school practically? Does that in any way serve the objects and ideals that you have got in your mind?—*A.*—Yes, on a small scale. It has got the kind of man at the head of it that you require to have.

Q.—In that case it is an American who teaches?—*A.*—Yes, he is an American.

Q.—And he actually teaches how to make particular articles?—*A.*—Yes.

Q.—Then I wanted to ask you about what the Education Department is attempting to do now: it is attempting to train its teachers in hand and eye teaching and so forth, and it has established a workshop in the central training house in order that its teachers may have some idea of the kind of instruction in hand and eye teaching I think you have in view: is it not possible for the Education Department for those methods to introduce generally into schools the kind of improved instruction that you have in view?—*A.*—They could not introduce instruction suitable for the artisan any more than they could introduce instruction in agriculture suitable for the cultivator. They could give that kind of smattering of hand and eye training which is suitable for people who are not going to devote themselves to manual labour.

Q.—Then you don't think that kind of hand and eye training can be made the basis of industrial education later?—*A.*—Certainly not.

Q.—And you don't think that is the right way of imparting industrial education?—*A.*—I am against that method.

Q.—That is one of the theories on the subject, is it not?—*A.*—Yes.

Q.—And that is the way to get your industrial training, that is, general education accompanied by some hand and eye teaching?—*A.*—That undoubtedly is the theory, but I think that it will fail necessarily in the Punjab. The difficulty is to induce the artisan to send his boy to such a school. I do not think that you could ever bring our carpenter boys and our weaver boys into schools, where the education is literary with only some hand and eye training thrown in. That is why I want schools which combine training in an industry with literary instruction from the very beginning.

Q.—Suppose you simply gave purely literary education?—*A.*—It would not attract the right boys.

Q.—You mean it would not attract artisan boys?—*A.*—No.

Q.—Supposing you had a Standing Committee for technical and industrial education as in the case of a school started in Bombay, is that the sort of machinery by which you might get your improved industrial schools? You have in this province people like Rai Bahadur Ganga Ram to work that sort of machinery?—*A.*—An advisory committee would be very useful.

Q.—I think you said, didn't you, that there is a prejudice on the part of cattle owners against mill-made cake—only against cake which is mill-made?—*A.*—There was a prejudice against *cotton* cake not against other mill-made cake. I do not think there is any prejudice now.

Q.—There is no prejudice?—*A.*—There are a number of factories in the province, there is one in Amritsar, one in Lyallpur, and half a dozen other mills in the province that turn out a good deal of cake, and I do not think any of them find much difficulty in marketing it.

Q.—There is no prejudice against the cake?—*A.*—I do not think so. There used to be, but I think it has died out; in fact a good deal of cake is imported from the United Provinces into the Punjab.

Sir D. J. Tata.—*Q.*—You speak about a cotton oil company in Cawnpore which you say was disposed of prematurely, and later on you say a pioneer factory for cotton oil is required. What was this oil factory in Cawnpore? Was it a pioneer factory, or a private-owned factory?—*A.*—Pioneer factory. I understand it was financed by Government and run by Messrs. Begg, Sutherland and Company.

Q.—Was it financed by Government?—*A.*—Government undertook the risks.

Q.—But then why was it given up? Government undertook the risks, and Messrs. Begg, Sutherland and Company ultimately bought it, is it so?—*A.*—I think it was auctioned by Government: somebody (not Messrs. Begg, Sutherland and Company) bought it.

Q.—What do you mean when you say that it was disposed of prematurely?—*A.*—I do not think it was carried on long enough to find out whether all the products of the mill

could be marketed with commercial success. I went to see the factory just before it was sold, and at that time they did not seem to know very much about it themselves or whether they had established a successful proposition.

Q.—Then you want a pioneer factory for cotton seed oil to be established by Government. After the failure of the last experiment you want another experiment to be made ?—*A.*—I do not think that experiment was at all a failure. It was very successful so far asit went. But the conditions in the Punjab are very different owing to the high price of cotton seed. We have to pay much higher price for cotton seed in the Punjab than in the United Provinces.

Q.—You have got a remark in your evidence which I am afraid is likely to give some offence. I refer to the paragraph about industrial schools in which you say "the reason is that the failure of the Indian artisan is a moral failure; he has little sense of honesty and aims only at making as much money as he can with the smallest effort." Don't you think that expression "little sense of honesty" is perhaps a little too strong ?—*A.*—No, I hardly think it strong enough.

Q.—I am sure you do not mean that the artisan is really dishonest, and tries to deceive ? Don't you think that in the instance which you give where he uses a bad piece of wood, or uses putty, it is due to ignorance or indolence, simply because his ideals are not as high as that of the other workmen ?—*A.*—I think there he wants deliberately to make money by any means he can.

Q.—For instance, when he is making a chair, as long as he makes it fit to sit upon and does not care much about the finish, I imagine there is no attempt at dishonesty. According to his ideals it is fit to sit upon, and that is about all that he cares for. A statement like this that he is dishonest might give offence. May I put it to you that you might revise this statement, and alter it in such a way as not to give room for such offence ?—*A.*—It is moral obliquity, it is intentional, that is my definite opinion. I do not think that it is anything at all but deliberate dishonesty.

Q.—Well, that is dishonest in this sense that his ideals are not high. Perhaps it would be dishonest if he deliberately tried to deceive. I mean he does not mind whether it is properly finished or not. The Indian artisan never finishes a thing because he does not realise that the finished article is better than the unfinished article. Is it not too strong, therefore, to call him dishonest straightaway ?—*A.*—I am afraid he is unfortunately so.

Q.—I am very sorry. It will give offence to have a whole class of people dubbed dishonest simply because they do not know any better. It is not due to dishonesty, I think, but simply to low ideals, if you like.—*A.*—I am afraid it is not. I am afraid I cannot agree at all.

Q.—When you talk of object lessons, you mean nature study, don't you ?—*A.*—Yes.

Q.—In one place you talk of little children of 5 and 6 being taught, what would you teach them in that line at that age ?—*A.*—That is usually what we call kindergarten.

Q.—Is that all you mean ?—*A.*—Yes.

Q.—Coming back again to that thing about dishonesty, I see you have got a paragraph which seems to express the thing much better than that. You say here in paragraph 8 under the heading "Advantages of education": "It can be done by instilling method and working against time, by inculcating concentrated attention, by rewarding exactitude and honesty and punishing scamping, etc." So it is merely want of exactitude and the desire to scamp work, I would rather, therefore, you didn't dub it as dishonest.

Mr. C. E. Low.—*Q.*—Supposing a man hangs about his work, it is not because that he is dishonest, but has no very good plan and method, which you well know. In one way you may call him a dishonest artisan, but it is not moral dishonesty in the true sense of the word, is it ?—*A.*—No, it is not moral.

Q.—It is not rather the same kind of dishonesty which deliberately uses bad materials because the man gets them cheaper which is a common thing in western countries. On the other hand, the Indian artisan does not very much care what kind of wood he puts and he is very indifferent. That is, if he sees the thing will serve the purpose, he does not mind putting in putty somewhere. There is no intention to deceive, that is the point. It is not deliberate ?—*A.*—It is deliberate in the sense that he puts money-making before anything else; that is his object; he has to make money, so he will do it in the cheapest way.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You speak of a handloom factory: was that a fly shuttle factory ?—*A.*—Yes, fly shuttle.

Q.—You wanted that Rs. 25,000 should be given to the man: the man had no capital with him. How many looms do you think he is going to put up to make it a successful handloom factory ?—*A.*—I forget how many he was going to put in; it would be about 20 or 30.

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Q.—Only 30 looms ?—*A.*—I do not remember what the number was.

Q.—The cost of the looms would be Rs. 25,000, and the man had some capital with him for some looms and a portion of yarn : what kind of cloth was he proposing to produce ?—*A.*—I think he had chiefly in his mind silk suitings ; that is the sort of handwoven cloth which pays well.

Q.—I did not quite clearly understand what you said in answer to a question by the President about the pioneer factories : you say a pioneer factory if a success should be sold : how should it be sold, by public auction ?—*A.*—To an approved party or by public auction. I do not regard it myself as a very important matter so long as Government does not continue to compete with private enterprise.

Q.—You know a Government factory is established from the people's money, and if it is given over to somebody as a matter of preference, don't you think that it will be unfair ?—*A.*—I would only make the offer specially to the firm which had been running it. I do not think that is unfair preference.

Q.—There is some chance of partiality, is there not ? If it is sold in auction then there is no partiality because Government has proved the pioneer factory to be a success ?—*A.*—I think any one who undertakes to work the factory should have a prior claim to purchase it.

Q.—But won't a pioneer factory be conducted in this way, that one party should run it and Government should finance it ?—*A.*—That would be the best way of running it.

Q.—Government not starting it themselves ?—*A.*—Private parties can always run a commercial factory better than Government. In the case of a pioneer factory it can be run by a private party and Government can help ; that would undoubtedly be the best way.

Q.—Do you think Government are not fit to manage ?—*A.*—They are not good managers in industrial enterprises.

Q.—Then about the provincial Industrial Department you mention altogether six people : who do you think should be the Indian representative among these, the business expert ? What class of business expert will he be, will he be a banker ?—*A.*—I do not think there need be any special Indian member. If there is a well-fitted Indian, he might be appointed in exactly the same way as a well-fitted European. I do not think I would reserve any of the posts for either Europeans or Indians ; there is no necessity.

Q.—You do not think that the representatives of commerce should have representation there by election ?—*A.*—No.

Q.—On this side perhaps it might be so, on our side we have got representatives of the Chamber ?—*A.*—This is an executive body, and there is no question of election at all. The men would have to be chosen by Government for their professional qualifications in one line or another, like the staff of a department or a board of directors.

Q.—You want a member of the Indian Civil Service as the Director, and you say there should be no civilian control over the board except by the Lieutenant-Governor himself ; but don't you think the chairman of the board being of the Indian Civil Service will also have the control ?—*A.*—He will be a member of the board, he will be more a mouthpiece.

Q.—Just like the others ?—*A.*—He will not be over and above them. He will be a member of the board, but have greater influence as chairman.

Q.—Then you say something about Mr. Noël Paton ; what are his schemes which you very much admire ?—*A.*—Well, cotton oil and wheat elevators and sugar were his three chief lines.

Q.—He was a Director-General of Commercial Intelligence in 1911, was he not at the time when the Russian barley crop failed ?—*A.*—Yes, I think so.

Q.—Then you say " it is not the lack of primary education that hinders industrial development ": do you think primary education is not essential for the people ?—*A.*—I do think it is, but not in its present form.

Q.—Do you include that in your scheme ?—*A.*—I undoubtedly think primary education is most necessary.

Q.—Then you say " industrial schools should be established at the centres of important industries where up-to-date methods specially applicable to the industries of that locality should be taught to boys and girls of 5 years old and upwards, etc." Don't you think that 5 years is too young an age for that ?—*A.*—I merely took the age at which the child now goes to its primary school ; usually they begin at 5.

Sir D. J. Tata.—*Q.*—You propose two sets of schools, ordinary elementary schools and industrial elementary schools. Is that not your idea ?—*A.*—Yes.

Q.—You want to disconnect industrial education from ordinary elementary education ?—*A.*—Yes.

Q.—Would you combine both in the same institution ?—*A.*—I should have the schools for artisan boys distinct and separate from the schools for ordinary elementary education.

Q.—As far as I can gather you want in the industrial elementary school a little elementary education ?—*A.*—Yes.

Q.—But in the elementary education you don't want industrial education ?—*A.*—I think it would be an excellent thing if there was hand and eye training, which Mr. Maynard spoke of, in all the elementary schools ; but that is not enough for artisan boys.

Q.—Then in the industrial schools you say there should be two-thirds general and one-third craft education in the first stage ; half general education and half craft education in the second stage ; and, finally, one-third general education and two-thirds craft education ?—*A.*—I do not want to be bound to that. It was written sometime ago and I might not adhere to that now exactly, but it is roughly right.

Q.—So you want two sets of schools, industrial elementary and ordinary elementary ?—*A.*—In fact I want three classes : ordinary elementary schools for boys in the towns like what there are at present; then (2) agricultural schools for cultivators' boys and (3) industrial schools for artisans' boys.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Have you any knowledge about the ginning and pressing factories? I think you inspected a great many of them ? Do you not think there are too many of them on the spot ?—*A.*—Far too many.

Q.—How should it be remedied? Can you suggest any remedy ? Have you mentioned anything in your note ?—*A.*—The remedy is to allow them to fall into ruins. In Karnal there are five of them in ruins ; in three the machinery has been removed in order that they may fall into ruins.

Q.—Do you think that the Government ought to step in and stop this business and take some measures to that effect ?—*A.*—Well, I think everything that has happened has happened. I do not think people are foolish enough to build any more ginning factories.

Sir F. H. Stewart.—*Q.*—With reference to your provincial chemist and engineer, what sort of pay do you think you can get a man for ?—*A.*—Same pay as for the chemist in the Agricultural Department ; he begins at Rs. 500 and leaves off at Rs. 1,000 ; that is not high enough, the maximum will have to be higher.

Q.—And for the engineer ?—*A.*—The same thing.

Q.—Rupees 750 to Rs. 1,500 ?—*A.*—Yes.

Q.—About your proposal for an inspector of industrial schools, one man would take a tremendous time to inspect all the schools, which would greatly reduce his value, would it not ?—*A.*—You can have assistant inspectors like the present inspectors of schools.

Mr. C. E. Low.—*Q.*—Is it not very strongly urged against bringing out teachers from home that a man brought out from home and put in charge of schools has got to improve, and he is not useful at first generally ?—*A.*—I think he must necessarily be of very little use at first ; we are all of very little use when we first come out to India.

Q.—You say that yourself, and you suggest there is a gentleman in this province who could do that work, but I do not suppose he could be spared ? Is this not a whole-time job ?—*A.*—Undoubtedly.

Q.—The officer you mention is not at all likely to be spared ?—*A.*—He could not be spared; I went round some industrial schools with him about two months after he first came out to India and had a chance to see him and his methods and he seemed to me to jump on the right thing at once.

Witness No. 369.

Mr. L. H. Taffs, *Inspector of Factories, Punjab, N.-W. F. P., Delhi and Ajmer-Merwara.*

Written Evidence.

Financial aid to industrial enterprises.

In the Punjab where there are but few large industrial concerns, there is, in my opinion, no great difficulty in obtaining capital for sound enterprises, backed by reliable persons or for concerns where good profits are obtainable without the necessity for much technical knowledge or experience, even though there may be a certain amount of risk ; the rapid growth of ginning industry is a good illustration of this ; as a matter of fact, I believe, that from the numerous enquiries, I have received when on tour, there is a great deal of unused capital in the Province.

The great handicap to industrial development in the Punjab is the lack of scientific and technical knowledge and of business training. The lesson of the Bank failures has made the small capitalists wary of sinking capital in enterprises of unproved worth, but if a really efficient and properly constituted department of industries giving expert technical advice on the industrial possibilities of the Province, could win the confidence of the small capitalists, there will be no lack of available capital.

I am not in favour of money grants-in-aid or of bounties, which would tempt capitalists to invest in unsound undertakings. It is true that Japan uses these methods to bolster up an export trade, but she has limited natural resources. India should, for the present, be content to supply, as far as possible, her own needs from the raw material available here. Government loans at low rates of interest would be a great advantage to industries for extensions. The splendid Tata scheme for a big industrial Bank will be a great boon to any factory languishing from lack of capital; the high rate of interest demanded by money-lenders has formerly been a great handicap to industrial development. In order to contend with Japanese or European competition which would kill a new industry, subsidies would be necessary in some new industries especially when the undeveloped raw material is under Government control, or in cases where industries would produce an article necessary for other manufactures. The best protection in such cases obviously would be the imposition of import duties.

Other ways in which Government might assist are—

(*a*) exemption from income-tax and octroi dues on raw material required for a new industry;

(*b*) supply of machinery or appliances on the hire-purchase system for village industries;

(*c*) institution of a Government audit department which would secure the confidence of the capitalists;

(*d*) for large enterprises, *e.g.*, hydro-electric power schemes, sugar factories, etc., Government should give support by providing part of the share capital and loaning the services of their technical experts at a nominal charge and perhaps providing a skilled managing director;

(*e*) give strong support to any industrial banks, *e.g.*, Tata's, and enlarge the scope of co-operative credit banks.

Pioneer factories.

Pioneer factories are specially desirable in India, where the technical knowledge and expert advice, which are absolutely necessary to make a specialised industry a success, are difficult to obtain.

The Industrial Development Board for India, having access to the best expert advice and technical research and possessing a detailed knowledge of the resources available, would be in the best position to initiate, in co-operation with the provincial organisation, experimental factories in order to prove or disprove the commercial practicabilities of the new enterprises. When proved successful, they would be sold to private capitalists; others would not be slow to follow suit, though precautions would have to be taken to prevent the pioneer factory from being killed by competition for raw materials and markets.

Such pioneer factories would be a source of skilled workers trained in the particular trade or industry. Instances are numerous of such industries springing round one pioneer concern, *e.g.*, the sports works at Sialkot; the foundries for the manufacture of the lathes and sugar-crushing mills at Batala; the carpet factories at Amritsar; the tanning industry at Cawnpore.

In cases where the raw material is only obtainable by Government, *e.g.*, the Resin and Turpentine industry in charge of the Forest Department, or in other cases where Government is the chief consumer of the manufactured articles, the concern might remain in Government hands, but in general, successful pioneering factories should be given over to private capitalists or companies in order to avoid competition with private enterprise.

Pioneer factories financed by Government should only be undertaken when private capital will not take the risks, but once a Government pioneer factory is started, steps should be taken to prevent imitation or competition during the years of experiment. I assume that the Provincial Industrial Deeprtments being under the control of the Indian Development Board would not be allowed to compete with each other.

If a pioneer factory has been started by private enterprise, Government should not compete with it, but give it support by technical advice, and in some cases,

by guaranteeing the purchase of products. Should a privately-owned pioneer factory persistently refuse to adopt the latest methods and fail to be profitable, Government should either buy it up or erect an up-to-date pioneer factory of its own.

It would be advisable for Government when transferring large concerns, in which technical skill is necessary, to ensure that the skilled staff should be retained for a term of years by the private company or capitalist. Government-controlled pioneer factories as opposed to privately-owned ones, would have the advantage that Government could check foreign competition, which might otherwise immediately stifle them; Government would also have better facilities for securing trained staff and other labour. Moreover it could more easily secure convenient factory sites in suitable localities.

Suggestions for some pioneer factories are included under the 'General' heading below.

Excessive number of ginning factories in the Punjab.

The following special note has been prepared at Government's request, to show that there is an excessive number of ginning factories in the Province, and that the ginning industry is very seriously handicapped by overcapitalisation. I append statements showing—

(*a*) the number of working gins in the Province, the number of available gins, the percentage of working gins and the number of gins necessary to deal with the crop grown and exported from the province each year;

(*b*) detailed particulars for the districts of Multan, Lyallpur, Hissar, Shahpur and Rohtak, in which the overcapitalisation of the industry is most marked.

It will be seen that the number of machines kept idle each season has varied from about 800 to 3,500 or between 25 per cent. and 50 per cent. of the available number.

The number of machines required in practice for any particular crop can be approximately calculated; a single gin turns out between 4½ and 5 maunds of cotton per day if the factory is working legal hours; during a season of 4 to 5 months factories work on the average about 100 days, the intermittent working of some factories being balanced by the double shift working of factories in other districts. Four hundred and fifty maunds of cotton may, therefore, be taken as the average output per gin per season; I am informed that it is scarcely profitable to work a factory unless such an output can be obtained; and as a matter of fact the gins of a considerable number of factories give a much larger output. The figures in line 8 of the statement, therefore, give the maximum number of machines which can be reasonably employed to deal with the particular crop.

From an examination of the table it is clear that at no time during the last 12 years do these maximum numbers ever exceed or even touch the corresponding numbers of machines available for work; indeed the excess of those available in the Province over those really required varies between 400 and about 3,300. The facts can be more easily realised by reference to the graph* appended.

That this statement really errs on the side of moderation, can be seen by a reference to the Liquidators' report on the failure of the People's Bank in which it is stated, "Practically all the funds were employed in the one industry—cotton manufacture—and since the funds available exceeded the requirements of that industry, it became hopelessly overcapitalised. It is safe to say that there are at present (1914) four times as many ginning factories in the Punjab as the crop required."

This regrettable overcapitalisation of the ginning industry dates from the season 1904-05, when the crop was a record one and was followed by what might be termed a boom in the ginning industry. Indian capitalists are very prone to put capital into concerns which are a proved success; they fight shy of new ventures involving special technical knowledge. Moreover, the amount of capital required for a ginning factory, which is usually constructed on the cheapest possible lines, is well within the means of small capitalists or of a partnership of bazaar traders.

The ease with which large profits could be obtained without the necessity for special technical knowledge or skilled management was a great attraction, and as a result, factories increased out of all proportion to the probable crop.

This overcrowding of factories and consequent undue competition for *kapas* and labour resulted in many failures, a considerable number of factories being compelled to close down after being worked at a loss. This state of affairs has forced ginning factory owners in many districts to adopt pooling arrangements as a means of protection, whereby a portion of the profits made by the working factories goes to pay interest (about 12 per

*Not printed.

cent.) on the capital vested in the factories remaining idle. In some cases combinations were even made between owners for the purchase of *kapas*, resulting in the artificial local control of prices and injustice to the zamindars.

This uncontrolled pooling system, originally adopted as a remedy, has, however, become worse in its effects than the evil itself ; in order to earn sufficient profits for the remaining idle factories, working expenses have to be cut down to a minimum and necessary repairs neglected ; cotton is watered to increase its weight ; cotton seeds are crushed in the attempt to secure more lint ; the wages of the employés are lowered and little is done for their general welfare ; while the provisions of the Factory Act designed to prevent overworking of women and children are deliberately and persistently disregarded in order to save labour expenses ; and as really efficient management cannot be afforded, the evil works in a vicious circle.

Yearly many factories have been erected merely to threaten the pool and force a share of the profits, and in many cases there has been no intention of working them ; nor can the evil be checked without legislation. During the last 3 years, in spite of comparative stagnation in the industry, no less than 16 new factories containing over 400 gins have been erected ; many of them in localities where factories are already standing idle for lack of work.

The detailed statements for the five districts in which the superfluity of ginning factories is most marked, explain themselves. Multan is a glaring example, the number of machines has more than doubled during the past 10 years, though the average crop has not increased. Of the 43 factories in the Multan pool only 17 are working—nor do the working factories work full time or use the maximum number of machines. In spite of this no less than 5 new factories are now under erection in that district.

In the case of Hissar the superfluity is due solely to the great decrease in the cotton output—10 years ago all the factories were working ; now, hardly one-third can be profitably worked and nearly 1,000 machines are standing idle.

In the district of Lyallpur the erection of many new factories on the Jaranwala line which was laid down about 10 years ago, has attracted a portion of the crop which formerly went to Lyallpur factories. Thus though the district crop has not decreased, many factories have to remain closed. The only remedy is to remove the factories to districts where the crop is increasing more rapidly, and to prevent the erection of any new factories in localities already over-crowded.

In the case of Shahpur District, where the whole of the factories have been worked within recent years, there is some hope of matters adjusting themselves when the crop increases to its former maximum.

Rohtak has suffered from a great decrease in the crop during the last few years and also from the fact that the North-Western Railway, in order to attract export trade, to their long 'lead' to Karachi, offer specially low rates for raw cotton from all stations on the Southern Punjab Railway to Kasur and Raewind. In 1916-17 the imports of cotton into Kasur were 2 lakhs of maunds—Rohtak factories thus suffer severely by this preferential treatment, while Kasur factories in good seasons work as long as from September to May.

From a survey of the above facts there can be no doubt whatever, even after taking into account the practice of keeping a reserve of gins to cope with sudden rushes of *kapas* when prices rise suddenly, that there is very serious overcapitalisation in the ginning industry, which not only handicaps the industry in every way, but is a big waste of capital which might have been utilised in financing more profitable concerns.

It would be safe to state that the capital lying idle in factories which are kept closed by pooling arrangements or other agreements, cannot fall far short of 10 lakhs of rupees, and if this incubus could only be removed from the industry, factories could make splendid profits without overworking their employees to the extent that is now so prevalent.

I believe there is a consensus of opinion among factory owners that little can be done to remedy this deplorable state of affairs without help and action by Government and I would put forward the following suggestions for restraining the evil to some extent, and preventing its expansion :—

(1) A system of licensing factories should be introduced which could be administered by the Department of Industries ; no permits for building new factories should be granted in any locality already overcrowded with factories, if the owners of the idle factories are willing to offer them for sale either by auction or at a price assessed by the Department of Industries.

(2) That a license to work a factory should be cancelled if the factory is kept closed for longer than 3 continuous years, provided that if more factories are found necessary as a result of an increase in the local crop, the owners of the existing factories shall have the opportunity of restarting theirs before a permit for a new factory is issued. In this way no idle factory would earn interest on its capital, and would not be in a position to blackmail the working factories.

(3) Though it would be a drastic and probably an impracticable step to make pooling systems illegal, the above licensing system would have the same practical result. A simple legislative method of preventing the excessive working of a few factories under the pooling system would be to make section 27 of the Factory Act inapplicable to localities in which more than 30 per cent. of the gins in factories within 10 miles are idle. Power could be given to Local Governments to issue such notifications when found necessary.

(4) The importing of ginning machines could be prohibited except under permit from the Industries Department.

(5) In the case of new canal colonies, sites should not be granted for more factories than can be maintained in full employment; a clause should be inserted in each agreement making the license to build a factory void unless the factory is built and worked within 5 years. There is reason to believe that factory sites have already been granted in new canal colonies far in excess of those necessary for any probable crop.

(6) Government or municipalities when granting lands for factory sites or when considering applications for licensing the erection of new factories should give preference to those applicants desirous of moving their factories from districts already overcrowded.

During my enquiry into this question I have ascertained the views of many of the prominent factory owners in the Province, and I feel sure that the majority of them would welcome the adoption of any proposal which would put an end to this evil, which so seriously handicaps the ginning industry and is the main cause of the regrettable sweating of women and children.

Technical aid to industries.

The services of Government experts as advisers should be freely available on payment of reasonable fees, but the object of the Industries Department should be to disseminate detailed technical information as widely as possible and induce capitalists to erect pioneer factories; the actual terms under which the license to run a pioneer factory would be issued, would be decided by the Industries Department according to the nature of the project—Government would probably put the services of its experts at the disposal of pioneer factory owners for a nominal sum to cover expenses.

Special researches carried out by Government experts at the Central Research Institutions in India at the instance of private concerns should be paid for and should not be published except with their consent before the elapse of a year from the date of making the report to the firm. For pioneer factories started under Government auspices and in the case of established factories, imposing no restriction on publishing the results of such researches, the fee should be on a lower scale.

Demonstration factories.

When a Government pioneer factory has been proved a commercial success, it should be used as a demonstration factory until taken over by a private capitalist; due precautions being taken by means of licensing system to prevent the establishment of an excessive number of such factories. Demonstration factories would, therefore, vary in size from such large pioneer factories to small workshops attached either to Government workshops or to secondary trade schools which should be established at the larger industrial centres, *e.g.*, Lahore, Rawalpindi, Amritsar, Ambala and Multan, wherein improved methods or appliances could be demonstrated.

It would be found that factory owners would gladly allow their factories to be used for demonstrations of new methods, appliances or processes.

The following are some suggestions for demonstration factories and workshops:—

(*a*) A well-equipped tannery, run on modern lines should be established in the vicinity of Lahore. In one sense this would be a pioneer factory, for the reason that though tanneries are undoubtedly successful in Cawnpore, they might not be commercially successful in the Punjab under different conditions. There is, however, a very great demand for well-tanned leather,

especially belting for factories, and if labour difficulties could be overcome, a Punjab Tannery having a constant supply of hides should prove very successful.

(*b*) A modern ginning factory at one of the larger ginning centres. It should contain the latest machines provided with dust-removing fans, if possible, and should demonstrate the best ventilation and lighting arrangements and the most efficient methods of guarding machinery. It should also be a model of business management and a pattern to all in the treatment of its employees.

(*c*) Soap and glass factories run on the very latest methods under expert advice, and supported by a Government Alkali factory worked by the electrolytic methods.

(*d*) A salt refinery.

(*e*) A match factory, supported by the Forest Department and aided by cheap railway rates.

(*f*) A bone manure factory; at present bones are exported, while bone dust and fertilizers are imported in considerable quantities.

(*g*) Workshops should be established separately or in connection with secondary trade or technical schools to demonstrate improved methods and encourage new designs in such special industries as the Hoshiarpur inlaid furniture trade, the cutlery trade at Wazirabad, the pottery and enamel work at Multan and similar indigenous industries, some of which are stagnating owing to the use of bad designs, the substitution of inferior material and the lack of skilled advice and business management.

(*h*) The commercial practicabilities of factories for the manufacture of such articles as buttons, mill bobbins, bamboo furniture, cotton hosiery, linoleum, cement and glazed tiles, should be investigated and demonstration or pioneer factories established where necessary.

Research institutions and industrial surveys.

There should be well-equipped research institutions for India, which should be staffed in all departments by experts from home, which should be distinct from scientific colleges and controlled directly by the Industrial Development Board. They should keep in close touch with the provincial industrial organisations and also with the Advisory Council for Research in England, through which facilities for keeping acquainted with the latest scientific developments would be afforded. There would be no need for a Research Department for India in England, but the best experts obtainable should be brought out on short terms of service to investigate special problems and the possibility of success of any big industrial undertakings proposed by the Development Board.

Through the Development Board difficulties experienced by the provincial industrial staff would be admitted to the research institutions for solution, and these institutions would also investigate from the chemical, mineral, botanical or agricultural point of view, any raw materials brought to light by industrial surveys.

In order to avoid duplication of work, local scientific colleges should not ordinarily concern themselves with industrial research work, though they might attempt minor researches if deemed advisable by the Local Board.

These colleges could provide skilled chemical assistants to work in the central research institutions. There are obvious advantages in concentrating research work under one head directly controlled by the Development Board, but as research work expanded, it might be found necessary to establish one for each province.

The existing knowledge of the available resources of the country should suffice to keep the new Industrial Development Department busy for many years, but it would be easy for the Development Board to order fresh surveys in particular cases when necessary.

Assistance in marketing products.

Industrial museums or permanent exhibitions of raw materials and products should be established under the control of the Provincial Industrial organisation in the more important industrial centres, *e.g.*, Lahore, Amritsar, and Delhi. These should be quite separate from the ordinary local museums and should also have sales agencies, especially for organising cottage industries as is done in Cawnpore.

Travelling industrial exhibitions should be sent to the more important commercial towns not having museums of their own, and use might be made of big fairs for advertising purposes.

There should be no need for trade representatives in the various provinces as the work of the provincial industrial organisations would be thoroughly co-ordinated by the controlling Industrial Development Board.

Trade information bureaus should be established at the provincial industries department office. Catalogues should be published half-yearly giving the quantities and prices of all important articles bought by Government Departments and the Railways; there should be lists prepared of imported commodities, the raw materialsfor which are already available in India. Such catalogues and lists should be sent out regularly to all industrial museums, sales depôts, public libraries and chambers of commerce. Government buying departments should not be allowed to import manufactured articles which can be obtained in this country.

The procedure of ordering European stores at the India Office should be entirely discontinued: such procedure only results in delay and unnecessary expenditure without any compensating advantages. European firms would then establish their own agencies in India or even erect factories here to supply the Indian market.

Land policy.

The complaint is a general one among factory owners, that suitable land is difficult to obtain for industrial purposes at reasonable prices, owing to the operation of the Land Alienation Act. Government should have the power to acquire land compulsorily for industrial purposes, and a stiff tax should be imposed on all undeveloped land kept out of use near townships. When concessions of land for industrial purposes are granted by Government, *i.e.*, when granting land in new colonies, a clause should be inserted in all agreements stipulating that the permit to use it for industrial purposes shall elapse if not acted upon within 3 years.

Training of labour.

The development of industries is in my opinion handicapped more than from any other cause by the lack of trained supervisors, as well as of efficient skilled labour in the lower grades. Compulsory primary education would undoubtedly aid the development of industries. The industrial education of the Province should be completely reorganised by an expert educationalist from home having scientific and engineering qualifications, who should be experienced in the organisation of trade schools, technical classes and polytechnics.

The primary industrial schools should be properly equipped, well staffed with teachers who not only know their craft but have had training in teaching; the curriculum should be designed to improve dexterity and develop the intelligence of artisans' sons and give them knowledge of economical and improved methods and of efficient tools. It should be in close touch with the industry of the locality, *e.g.*, metal work, furniture-making, pottery, etc.

While the aim of such schools should be to turn out efficient skilful artisans, there should be opportunities for the cleverer boys of receiving supplementary literary instruction so that they could pass by means of scholarships to the secondary trade schools and even to the polytechnics giving advanced education in telegraphy, mechanical and electrical engineering, applied chemistry, etc., to be founded later.

Secondary trade schools should be founded in such commercial centres, as Lahore, Amritsar, Ambala, Hoshiarpur, Multan, Ludhiana, Sialkot, and it is essential that they should be in charge of skilled Europeans, who could be selected from soldiers discharged in India after the war. Such schools would provide skilled labour and supervisors for particular industries as is done by the Railway technical schools. Existing Mission industrial schools could also be brought into the scheme.

Evening technical classes at moderate fees should also be organised in such schools, which would also act as demonstration workshops for spreading the knowledge of efficient methods, the use of improved tools and the processes of finishing articles properly.

Such schools as well as the technical colleges, to be established later, should be organised and financed by the provincial Education Department, but they should be opened to inspection by Inspectors appointed by the Development Board for India.

Training of managers and supervisors.

At present the sources from which skilled managers for industries necessitating technical knowledge and scientific training, are but few, *e.g.*, the M.Sc. classes at Government College and Forman Christian College (especially the Applied Chemistry section of the latter) and the Roorkee and Rasul Engineering Colleges. These should be more strongly supported by additional grants from Government and the curriculum should, as far as possible, be brought into line with the requirements of developing industries. These should also be instructed by industrial experts from the Development Board and by the Provincial Department.

It would be a splendid idea if courses in business management could be started in all University Colleges and trade schools and diplomas granted. Holders of such diplomas should be given the preference in deciding Government appointments, and all indus-

trial concerns assisted by Government should be required to take a certain number of men educated in science colleges and to give them a full technical training in the particular industry.

It is my experience that managers of the smaller factories are usually quite incompetent; the majority are uneducated and quite unable to keep accounts; they have little idea of handling labour or of saving working expenses. Such men should have been through a trade school and have had some instruction in business methods and management.

Special courses (both day and evening) should be started in the existing colleges or in a new technical institute in such subjects as electrical engineering including house-wiring, motor engineering, telegraphy and telephony, applied chemistry, steam engines including repairs, machine drawing, surveying, building construction and house decoration, etc. Metal and wood-work classes could be carried on in the Mayo School of Arts as at present. For such classes it would be most essential to have well-paid European instructors, many of whom could be obtained after the War from the Army, which contains many skilled craftsmen willing to accept posts in this country. Examinations could be conducted under the auspices of the City and Guilds Institute, London.

Mechanical Engineers.

The examinations for the factory mechanical engineers' and engine drivers' certificates now held in the various provinces should be made uniform by having one examining body for the whole of India with local committees for the practical test. By this means certificates of proficiency could be issued in small provinces like North-West Frontier and Ajmer-Merwara and Delhi, which are now unable to afford separate examining bodies.

The importance of and necessity for improving labour conditions.

It is apparently not generally recognised that the importance and advantage of industrial development to a country lies in the fact that it keeps a portion of the population healthily and happily employed; mere developments of its natural resources in order to build up wealth for the few, cannot result in any real lasting benefit to the country, if the price of such industrialism is the misery, degradation and physical deterioration of the workers. There is a tendency to judge the success of industrialism by the increase of production, without sufficient attention being paid to the welfare and mental and physical development of the employés. In my opinion, the most important factor in industrial development, is the building up of a class of efficient contented operatives working under humane and healthy conditions.

To obtain a permanent class of efficient skilled industrial workers, in a country where the prejudice against manual labour is very strong, it is most essential that the labour conditions should receive more attention from employers of labour and from Government, and I would strongly urge the following for the amelioration of the lot of the factory workers:—

(*a*) *Raising the age-limit for children.*

The maximum age of children allowed to work on machinery in factories, especially in textile mills, should be raised immediately from 9 years to 11. In England, the half-time system has already been abolished and the minimum age raised to at least 14. The strenuous dehumanising conditions under which tiny mites of 9 years work in ill-ventilated spinning mills is nothing short of slavery, and cannot but result in serious physical deterioration of the workers. Compulsory primary education should be introduced as soon as possible.

(*b*) *Ventilation.*

The Factory Act should be immediately amended so that reasonable ventilation may be enforced in textile factories, in which the atmosphere is usually unbearably stuffy and foul.

(*c*) *Compensation for accidents.*

A worker who is seriously injured for life owing to negligence of the owners to guard dangerous machinery, has practically no remedy under the present law. To protect the industrial workers from owners, careless and unscrupulous enough to risk the lives and limbs of their employés, merely in order to save a little on the working expenses, the introduction of a short Employers' Liability Act is most desirable, if only in the interest of industrial development. Japan has already protected its workers in this way, and similar measure of justice is badly needed in this country.

(*d*) *Housing conditions.*

The conditions under which workers in the large factories are usually housed are deplorable in the extreme. The squalor and generally unhealthy conditions under which these wretched operatives exist, must materially reduce their efficiency and earning power. It should be made compulsory for owners of factories above a certain size to provide decent, well-ventilated and healthy dwellings for their employees at reasonable rents.

When large Government pioneer factories are established model villages should be erected for the employés with provision for education and healthy amusement, as well as a savings bank and a co-operative store.

(*e*) *First-aid.*

Numerous deaths have occurred from small injuries in factories owing to blood-poisoning. Provision of first-aid by employers should be made compulsory.

(*f*) *Prohibition of liquor shops.*

The erection of liquor shops within the precincts of a factory of cooly lines should be prohibited.

(*g*) *Provision of washing accommodation* should be made compulsory in all factories employing more than 100 persons.

Cottage industries.

An association for the encouragement of cottage industries on the lines of the Bengal Cottage Industries Association should be established in this Province.

A special official appointed by the Development Board would be in charge of the improvement and encouragement of cottage industries. The trade schools and demonstration workshops would give aid in improving their methods, designs and materials, while the commercial museums and sales depôts would enable them to secure wider markets for their goods. Government orders could be given in some cases on condition that apprentices were taken.

Machines could be granted by the Industries Department on the hire-purchase system, where necessary. Chick-making, embroidery and basket-making could be introduced as cottage industries for girls.

GENERAL ADMINISTRATION AND ORGANISATION OF THE INDUSTRIES DEPARTMENT.

(*a*) *Imperial.*

I am assuming that the Munitions Board will be enlarged by the inclusion of additional special experts, and will become after the War the Indian Industries Development Board, the President of the Munitions Board becoming the Director-General of Industries, who would be the Member for Industries in the Executive Council. The Board would have separate budgetted funds and would be organised into separate departments. I would suggest the following :—

Direction, Chemical, Forests, Transport, Commercial Intelligence, Textile, Surveys and perhaps Cottage Industries.

At the head of each department there would be a scientist capable of organising his department thoroughly and solely responsible for its efficient working.

The Direction Department would control, co-ordinate and advise the Provincial organisation, and make all appointments to the Industrial service, whether Imperial or Provincial. Additional technical specialists would be appointed by the Development Board from home, preferably on short-term agreements and their services would either be lent to the Provincial organisations or the research institutions, as found necessary. They should be given frequent opportunities of taking short leave to study conditions and new methods at home and in other countries.

The Central Research Institutions should be under the control of the head of the Chemical Department of the Imperial Board. He would have an expert technical staff organised into groups for convenient working. Local Governments should not engage any technical experts without consulting the Development Board. Indians from scientific colleges could be appointed as Assistants in these research institutions. The representative of Forests on the Board would take over charge of the industrial work of forests and would co-ordinate his department with the Forest service through the Chief Conservator of Forests.

Other departments.

The Head of the Transport Department would work through the Railway Board, which would have powers to adjust railway rates, etc.

The existing Department of Statistics and Commercial Intelligence should be made into a department of the Development Board. In order to increase its efficiency it would be strengthened by the inclusion of persons having knowledge of industrial matters. The lack of such supervision is the cause of the failure of some of its publications (*vide* the scathing criticism on its list of factories on pages 391-394 of the September, 1916, issue of the Indian Journal of Economics). The publication of the Indian Trade Journal should be continued and monographs and reports of investigations should be freely published, especially in the vernacular of the particular Province.

As much of the industrial development carried out in the provinces would be of an Imperial nature, the Imperial Board should have ample funds allotted, so that grants could be made to Provincial organisations for special projects, the cost of which Local

Governments might not be able to afford; otherwise the provinces in which the need for industrial development is greatest would be seriously handicapped.

(*b*) *Provincial.*

Director of Industries.

The Provincial Director of Industries would be a member of the new Industrial Development service (comparable with the Forest service). He would most emphatically have to be an expert, preferably from home, who has had wide business experience, and if possible, a training in Applied Science, Engineering and Economics, so that he could himself understand and deal efficiently with industrial problems. He should be the Secretary to Government for Industries, and be directly responsible to the Lieutenant-Governor for his policy and the expenditure of funds allotted by the Local Government. He should be assisted by an Advisory Board, which would include the Director of Agriculture, the Development Board Technical Advisers attached to the Province, the Director of Public Instruction, a Forest Department representative, a Railway Traffic official, the Inspector of Factories and 6 non-officials actively interested in industries. Others could be co-opted as found necessary. The non-officials should perhaps receive a small honorarium for their services. The recommendations of this Board would not have executive force, but copies of any proposals made by it would be sent to the Development Board for consideration as well as to the Local Government.

To obtain a Director of Industries with the requisite qualifications, Rs. 1,500 a month rising up to Rs. 2,500 should be offered as a minimum. This should be sufficiently high to attract the right type of man from home, who should be keenly interested in the work rather than in the pecuniary emoluments. He should be eligible for the higher posts on the Development Board. It would, however, be a very short-sighted policy, considering the great issues at stake, to attempt to economise on salaries of important experts and so obtain inferior men.

Assistant Directors.

Assistant Directors of Industries who would have had a scientific training should be on a scale from Rs. 500 to Rs. 1,250 with opportunities of promotion to Directorships and posts under the Development Board. They should be sent on deputation for research work at the Central Research Institutes as opportunities offered. Though Consulting Engineers might be temporarily appointed, the whole Industrial Development service should be Imperial and self-contained. To import amateurs having no scientific or business training, however skilful administrators they might be, would only result in inefficiency.

There should be frequent conferences between all departments, and the Indian Science Congress should also be encouraged to stimulate public interest.

Aid by municipalities.

Municipal authorities could aid industries in the following ways:—

(1) By exempting machinery from octroi duties.
(2) By initiating housing schemes for industrial workers.
(3) By providing cheap electric power.

There should be an opportunity of appealing to the Industries Department against the imposition of unfair octroi duties by municipalities on raw materials required for industries.

Hydro-electric power surveys.

Further investigation should be made into possibilities of obtaining cheap hydro electric power from canal falls. Water-power should be let to factories by the canal department at much lower rates than at present.

Jail competition.

The object of Jail industries should be to fit prisoners to find employment after release; this does not appear to be the policy at present.

Jail workshops which now work on antiquated methods should be made into demonstration workshops for the most improved methods in smithy, carpentry and metal work, etc. The practice of employing forced labour, *e.g.*, Jail prisoners and criminal tribes alongside ordinary workers at very low rates of wages, should be stopped. It unfairly depresses wages and degrades industry.

General.

In addition to those mentioned under the heading "Demonstration Factories," the following may be suggested as possible industrial developments requiring investigation:—

(1) The establishment of a silk industry under skilled supervision.
(2) A modern cotton-seed oil refinery.
(3) A wood pulp factory in the Kangra District.
(4) Calico-printing works.
(5) Bleaching powder works in conjunction with an electrolytic Alkali plant.
(6) Potash salts from the neighbourhood of Khewra.
(7) Industrial alcohol.
(8) A glass factory worked by modern methods.
(9) Development of fibres available.
(10) Tinned fruit industry at Quetta or in the hills.

STATEMENT SHOWING THE COTTON OUTPUT AND THE NUMBER OF GINNING MACHINES IN THE PUNJAB.

Serial No.	—	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
		Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
1	Cotton production deduced from Seasonal Crop Report ..	1,292,600	1,744,195	753,420	1,466,780	1,485,025	1,455,705	1,660,980	1,348,730	1,030,660	1,488,970	2,588,755	2,081,285	845,145	1,507,810
2	Cotton outturn obtained from examination of Provincial Trade Reports ...	1,419,334	1,614,421	1,302,714	1,343,112	1,592,024	1,186,020	2,107,144	1,641,744	1,207,775	2,237,511	2,554,675	1,100,907	1,635,489	1,772,291
3	Exports deduced from Railway Audit and Traffic Records ...	1,557,149	2,100,208	1,098,657	1,543,094	1,516,259	1,400,345	2,242,114	1,170,709	2,002,994	(a)	2,609,606	1,719,490	1,865,058	2,180,728
4	Number of working gins (b) ...	2,148	2,731	2,661	3,266	3,593	3,425	4,039	3,799	3,086	3,316	4,881	3,898	3,801	4,371
5	Number of working factories under the Factory Act	114	121	141	159	166	174	168	182	196	166	170	149	140	132
6	Number of available gins ...	3,022	3,591	3,964	4,446	4,934	5,238	5,394	5,670	6,076	6,314	6,731	7,130	7,270	7,547
7	Percentage number of gins working ...	71%	76%	67%	73%	73%	65%	75%	67%	50%	54%	72%	55%	52%	58%
8	Number of gins required for crop, assuming 450 maunds of cotton per gin ...	3,460	4,667	2,441	3,429	3,369	3,201	4,982	2,602	4,451	4,972	5,799	3,821	4,144	4,864
9	Number of gins available in excess of the number required for the crop ...	−438	−1,076	1,523	1,017	1,565	2,037	412	3,068	1,625	1,542	932	3,309	3,126	2,701

NOTE.—(a) Reliable figures unobtainable owing to the half yearly system of compiling records being changed to an annual one.
(b) Double gins counted as 1½ single gin for the purposes of output.

STATEMENT SHOWING THE COTTON OUTPUT AND THE NUMBER OF GINNING MACHINES IN THE MULTAN DISTRICT.

Serial No.	—	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
1	Cotton outturn obtainable from Railway Traffic and Audit Records ...	149,044 mds.	129,544 mds.	37,258 mds.	53,194 mds.	87,961 mds.	72,862 mds.	1:4,792 mds.	64,115 mds.	121,907 mds.	...	116,807 mds.	107,195 mds.	127,935 mds.	109,271 mds.
2	Number of gins working ...	260	358	317	362	428	316	468	316	296	...	520	340	326	486
3	Total number of available gins ...	375	484	515	545	651	651	676	798	880	...	1,050	1,180	1,272	1,349
4	Working gins expressed as percentage of total available ...	69	74	62	66	66	49	69	40	33	...	49	29	26	36
5	Number of gins required for the crop, assuming an output of 450 maunds of cotton per gin	331	288	83	118	195	162	411	143	271	...	260	239	284	243
6	Number of available gins in excess of those required	44	196	432	427	456	489	265	655	609	...	790	941	988	1,106

STATEMENT SHOWING THE COTTON OUTPUT AND THE NUMBER OF GINNING MACHINES IN THE LYALLPUR DISTRICT.

Serial No.	—	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
1	Cotton outturn obtainable from Railway Traffic and Audit Records ...	330,120 mds.	245,997 mds.	34,233 mds.	213,779 mds.	301,915 mds.	251,182 mds.	374,820 mds.	134,775 mds.	266,472 mds.	...	369,030 mds.	228,343 mds.	253,097 mds.	317,999 mds.
2	Number of gins working ...	260	404	314	432	440	400	466	420	290	...	468	300	500	576
3	Total number of available gins ...	700	700	700	700	700	700	700	766	806	...	806	940	940	1,000
4	Working gins expressed as percentage of total available ...	37	58	45	62	63	57	67	55	37	...	58	32	53	58
5	Number of gins required for the crop, assuming an output of 450 maunds of cotton per gin ...	734	547	76	475	670	558	833	299	592	...	820	507	562	706
6	Number of available gins in excess of those required ...	—34	153	624	225	30	142	—133	467	214	...	—14	433	378	294

STATEMENT SHOWING THE COTTON OUTPUT AND THE NUMBER OF GINNING MACHINES IN THE HISSAR DISTRICT.

Serial No.	—	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
1	Cotton production deduced from Seasonal Crop Reports	126,780 mds.	153,985 mds.	80,195 mds.	145,575 mds.	198,885 mds.	92,080 mds.	142,800 mds.	71,935 mds.	25,370 mds.	46,940 mds.	101,340 mds.	123,315 mds.	49,600 mds.	42,495 mds.
2	Number of gins working ...	600	624	675	785	839	592	590	582	482	632	770	614	668	364
3	Total number of available gins ..	700	700	700	938	938	938	938	954	1,084	1,084	1,084	1,084	1,084	1,048
4	Working gins expressed as percentage of total available	86%	89%	96%	84%	89%	63%	62%	61%	44%	58%	71%	56%	62%	35%
5	Number of gins required for the crop, assuming an output of 450 maunds of cotton per gin	281	342	178	324	442	205	318	159	59	143	225	274	110	95
6	Number of available gins in excess of those required	419	358	522	614	496	733	620	695	1,035	941	859	810	974	953

STATEMENT SHOWING THE COTTON OUTPUT AND THE NUMBER OF GINNING MACHINES IN THE SHAHPUR DISTRICT.

Serial No.	—	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
1	Cotton outturn obtainable from Railway Traffic and Audit Records ...	21,756 mds.	64,526 mds.	49,555 mds.	84,266 mds.	108,181 mds.	131,586 mds.	220,955 mds.	122,394 mds.	179,773 mds.	...	221,203 mds.	176,240 mds.	127,513 mds.	110,332 mds.
2	Number of gins working ...	...	...	...	70	130	207	273	313	316	...	377	263	234	258
3	Total number of available gins ...	...	...	...	100	150	270	285	313	316	...	401	463	463	463
4	Working gins expressed as percentage of total available	...	...	...	70	86	76	95	100	100	...	94	57	50	56
5	Number of gins required for the crop, assuming an output of 450 maunds of cotton per gin	...	...	...	187	240	292	491	272	399	...	403	392	283	245
6	Number of available gins in excess of those required	...	...	...	—87	—90	—22	—206	81	—83	...	—2	71	180	218

STATEMENT SHOWING THE COTTON OUTPUT AND THE NUMBER OF GINNING MACHINES IN THE ROHTAK DISTRICT.

Serial No.	—	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
1	Cotton outturn obtainable from Railway Traffic and Audit Records ...	80,272 mds.	107,476 mds.	81,579 mds.	115,905 mds.	56,612 mds.	49,716 mds.	71,010 mds.	41,562 mds.	79,928 mds.	...	100,978 mds.	15,824 mds.	68,898 mds.	46,972 mds.
2	Number of gins working	54	108	24	76	138	190	200	190	88	...	201	91	99	60
3	Total number of available gins ...	75	113	113	113	223	223	223	223	223	...	223	223	223	223
4	Working gins expressed as percentage of total available.	72	95	21	67	62	85	90	89	39	...	90	41	44	27
5	Number of gins required for the crop, assuming an output of 450 maunds of cotton per gin.	178	229	181	257	126	110	158	92	177	...	224	35	153	104
6	Number of available gins in excess of those required.	—103	—116	—68	—144	—13	113	65	131	86	...	—1	188	70	119

ORAL EVIDENCE, 10TH DECEMBER 1917.

Sir D. J. Tata.—*Q.*—In your opening sentence you say, "There is in my opinion no great difficulty in obtaining capital for sound enterprises, backed by reliable persons." So, practically it comes to this, that you should have people with business training and aptitude who should start them in order to promote industries in any particular district. It is not the people who subscribe to things so much as the captains of industry who really make the industry possible in the particular province?—*A.*—Yes.

Q.—So it is really business men that are wanting here?—*A.*—Yes.

Q.—The traditions of the Punjab are against this sort of training. Bombay has advanced because it has special facilities of commerce and trade being a port and has been in contact with industries so that it has produced industrial and business men Is not that the idea?—*A.*—Yes.

Q.—If you had business men you would probably find no difficulty in getting people to invest capital in industries?—*A.*—Good business men put their own money into a concern and run it. The point is that the people would not put their money into any concern even if it is really sound unless they can trust the person who is promoting it.

Q.—You have to find the men whom you can trust, and who have shown their capacity for managing business concerns successfully, and if you get these there will be no difficulty in getting capital?—*A.*— No difficulty at all then.

Q.—Later on, in connection with the ways in which Government might assist you say, "Government should give support by providing part of the share capital and loaning the services of their technical experts at a nominal charge, and perhaps providing a skilled managing director. Where is that skilled managing director to be found by Government?—*A.*—In promoting pioneer factories I assume that in some cases Government must give capital to help.....

Q.—I am asking you about the skilled managing director?—*A.*—Unless they had a skilled managing director it would not be a success. Government would get one from home, otherwise the pioneer factory could not be a success. If there was a man who wanted to promote a certain industry and came to Government for help, Government could lend that expert.

Q.—Anybody to manage a business with success should have a certain amount of local experience?—*A.*—I don't think so Suppose they wanted to start a pioneer sugar factory or something of that kind, they would put that in charge of a skilled managing director not necessarily of local experience.

Q.—Should that man be brought out from home?—*A.*—It would all depend upon the particular factory. In the case of sugar, yes.

Q.—You say, "Though precautions would have to be taken to prevent the pioneer factory from being killed by competition for raw materials and markets." What sort of precautions?—*A.*—You would have to have a form of licensing. There would be difficulties in giving pioneer factories to private enterprise unless you had some means of preventing competition: for instance Government could supply raw materials to the pioneer factory or guarantee to purchase the products.

Q.—You say "Government-controlled pioneer factories as opposed to privately-owned ones, would have the advantage that Government could check foreign competition, which might otherwise immediately stifle them." How can Government check foreign competition? *A.*—By an import duty on the manufactured goods. Government would then take interest in it and they would have power to do so. A private individual would not be able to impose any import duty.

Q.—At the end of that paragraph you say, "Moreover it could more easily secure convenient factory sites in suitable localities." How could they get these? By acquiring land from private owners?—*A.*—Government has a lot of land at its disposal I believe.

Q.—It may not be suitably situated?—*A.*—If they cannot get land they should take it compulsorily.

Q.—You are for land acquisition by Government for industrial purposes?—*A.*—At a fair valuation. I think it is a great difficulty in the Punjab. You cannot get land.

Q.—You say, "A system of licensing factories should be introduced which could be administered by the Department of Industries; no permits for building new factories should be granted in any locality already overcrowded with factories, if the owners of the idle factories are willing to offer them for sale either by auction or at a price assessed by the Department of Industries." When they are sold who is to buy them or what is to be done with them? Are they to be put up anywhere else? What is to happen to them if they are sold?—*A.*—I mean that if the original owner is willing to auction it, another man should not be permitted to put another up. He should buy the one there already. Under the licensing system I suggest, idle factories would obtain no profits and therefore would be going at cheap prices: cotton buyers might buy them: the point is there would be no parasatic idle factories, and licenses would only be granted if a factory was really going to be worked.

Q.—And put it up somewhere else?—*A.*—Possibly. If a man wants to put up a factory at a certain place it means that the crop is increasing in that place and there will be work enough for another ginning factory there. As in paragraph 6 of my suggestions he could move to another district.

Q.—He is to be allowed to buy a factory from some other district?—*A.*—I mean in the same place in the paragraph quoted.

Q.—Why should one man sell to another for the same purpose in the same place? It does not matter who owns it? You say that he sells it to another who puts it up there?—*A.*—In order to work this licensing system I think you must have something of that sort.

Q.—You say that no permits for building new factories should be granted. That means that no more factory should be allowed to be put up in that particular district and if a man wants to sell a factory he should be allowed to sell and he sells it, and it simply means that it goes into the hands of another and there will be the same number of factories?—*A.*—If he puts up another one that adds one more in the district and will increase the difficulty because he will come into the pool. What happens is this. They put up factories and they do not intend to work them and it is an additional burden on the pool. I was trying to prevent that. The new man would buy an idle factory and work it.

Q.—Selling it to another man does not alter the situation?—*A.*—That prevents the addition of one new factory. Instead of putting up a new factory he should be compelled to buy the one already existing.

Q.—And he does not work it either and so the conditions are the same—*A.*—He would work that one, because under the system suggested he would have no profit otherwise.

Q.—You presume that in a particular district where there should be five factories there are fifty factories more put up by people in order to share in the pool. How will it be a remedy to allow one of these being sold to some one else in the same place? You say that in a new district if a man wants to put up a factory he should buy an old one from where it has not been worked? That is what you mean here, I presume?—*A.*—I think it is clear: under the licensing system the pool would be broken and there would be no idle factories parasitic in the working factories.

Q.—With regard to researches by Government experts you say, "Special researches carried out by Government experts at the central research institutions in India at the instance of private concerns should be paid for and should not be published except with their consent before the lapse of a year from the date of making the report to the firm. You limit the period to a year. Do you think that is sufficient?—*A.*—It will all depend upon the concern. In one case it may require a longer period and in another case it may not require any at all.

Q.—You do not want to fix the period generally for every case?—*A.*—I would not insist on a fixed period.

Q.—One year seems to be too little.—*A.*—It will depend on the particular concern.

Q.—You say, "It would be found that factory owners would gladly allow their factories to be used for demonstrations of new methods, appliances or processes." Would private factory owners allow their factories to be used as demonstration factories?—*A.*—If there is a new method I think factory owners would be quite willing to have their factory tried by the new method.

Q.—They would not like outsiders to come in and pry into their business? If they tried a new thing, they would try to keep it to themselves, and I do not think they would allow outsiders to come and see the process.—*A.*—How is Government to show a new method or practice? There may be factories already existing working under antiquated methods and I think that in that case they would be willing to allow others to come and see the process. They might want conditions that they should have the first opportunity of putting that process into operation. Government could give compensating advantages.

Q.—With regard to tanners, you say, "There is a very great demand for well-tanned leather especially belting for factories." Are there so many factories in the Punjab that there is a great demand for belting?—*A.*—Yes. It has gone very high in price.

Q.—What sort of factories? The existing ginning factories and others would require this belting?—*A.*—I think so.

Q.—I do not know the number of factories that there are in the Punjab.—*A.*—In the Punjab, including every factory there may be 300.

Q.—You say, "It should also be a model of business management and a pattern to all in the treatment of its employés." That is all very well. You say also, "It should contain the latest machines provided with dust removing fans if possible, and should demonstrate the best ventilation and lighting arrangements and the most efficient methods of guarding machinery." Where are we to get these model business men? Who is to find these model men to manage the business? Would he be a Government servant or a private business man?—*A.*—You will pick up a good man and set up a

model factory. The factory owners are only willing to adopt changes when they can see them, and then they will act upon and follow them. If a model factory were put up they would be willing to visit it and see the things for themselves.

Q.—It is the absence of business management that makes failures and if they could be got, of course the model business men would be able to do all these things themselves. The difficulty is to find them. Where are we to find them?—*A.*—The business man would not necessarily do all this.

Q.—The success of an industry would depend on the man who runs it on good lines, and the difficulty is to find the right kind of man.—*A.*—That is one great difficulty in the Punjab, but a model factory is not meant to make the greatest possible profits. There are other considerations as I have emphasised.

Q.—Are there any bone manure factories in this province?—*A.*—I do not think so.

Q.—And do you know of any in India?—*A.*—No. A good many places export bones.

Q.—Do you know of any bone manure factories which have met with success?—*A.*—There may be in the Bombay side.

Q.—I do not know if they have met with success. I believe they crush bone and export. You propose that it should be made into manure and not simply crushed?—*A.*—That would be successful if it were run properly.

Q.—And you convert it into fertilisers?—*A.*—I am informed that there is a large quantity of bone manure imported and I think we have bones here and they may be used. There are several little places Multan, for example, exports bones and they come back to India as fertilisers.

Q.—You have no idea of the quantity of export of bone-dust and of the manure imported?—*A*—I cannot remember exactly the quantities.

Q.—You think there is an opening for a bone-manure factory?—*A.*—Yes.

Q.—You say with reference to potteries "that they are stagnating owing to the substitution of inferior material and the lack of skilled advice and business management." Are you aware that in the Bombay School of Art Mr. Fern advises on clay and soils and things of that kind, and there is now a department in that school, which advises people about the different kinds of clays and soils and so on.—*A.*—We want a man like that in the Punjab.

Q.—Do you know Mr. Fern's work?—*A.*—No.

Q.—That is the sort of man that you mean in that paragraph?—*A.*—These industries need a man to look after them who could go round and help them with regard to these three points that I have mentioned.

Q.—Among the factories that you propose you mention a linoleum factory. What facilities are there for that manufacture?—*A.*—I do not know the practical manufacture of linoleum, but I believe cotton-seed oil can be used.

Q.—What are the raw materials needed for linoleum?—*A.*—I think cotton-seed oil comes into linoleum manufacture. It is made in Dundee and it can be made here I think I only gave these factories as suggestions for investigation.

Mr. C. E. Low.—*Q.*—Jute in the first instance, linseed oil and some colouring materials, I think. Is it used largely here?—*A.*—It is not used to a large extent, but it would be a good thing if it could be cheaply made in India. I think the raw materials are produced here.

Q.—Don't you start on that basis whether the raw materials are produced or not?—*A.* Yes.

Q.—*Sir D. J. Tata.*—You say, "Local scientific colleges should not ordinarily concern themselves with industrial research work though they might attempt minor researches... These colleges could provide skilled chemical assistants to work in the central research institutions" Would these students who come from the colleges become chemical assistants straight off without first undergoing some sort of apprenticeship or getting some experience of research? *A.*—The students of the M. Sc. section of the Applied Chemistry of the Forman Christian College would be a very good material.

Q.—You know the Institute of Science at Bangalore which takes science graduates. They go and train themselves there for research work, and after they have been through a course of three or four years they become fit to become assistants. Would it be good to make them assistants straight from the college of science?—*A.*—The men at the central research institute will decide that. They may be on probation on a small pay at first and the pay may be increased afterwards when they become of more value to the industry.

Q.—They would not be fit assistants straight off from the college?—*A.*—I do not mean straight off.

Q.—You say, "Government buying departments should not be allowed to import manufactured articles which can be obtained in this country." Isn't that only if the quality

will serve ? Anything made in this country should not take the place of the imported article simply because it is made in this country ?—*A* —I mean of serviceable quality, but you should try and improve the quality.

Q.—What price would you pay for this home-made article ? Same as the imported article ? Would you be prepared to accept a slightly lower quality as long as it is serviceable ?—*A.*—They should try and improve the finish even then. If the buying department cannot get a suitable article in India I should imagine that it will be a good thing to inform the Industrial Board. Then there will be gradual improvement and then they will buy. There is at present no machinery at all for that, and they go on rejecting Indian-made articles because of the lack of finish.

Q.—You would not buy simply because it was Indian made but you would buy if the quality would serve the purpose ?—*A.*—Yes.

Q.—You say with regard to secondary trade schools, " They should be founded in such commercial centres .....and it is essential that they should be in charge of skilled Europeans who could be selected from soldiers discharged in India after the war." What sort of knowledge would these soldiers have ?—*A.*—I think there are a large number of soldiers in India who have engineering qualifications and have knowledge of crafts and so forth. Quite a large number of them are employed already in many works. They provide very good material as instructors.

Q.—Why is it essential that they should be in charge of a skilled European ?—*A.*—I think the skilled European will be a better man, having more skilled experience.

Q.—Can you not find a skilled Indian ? Are there not enough skilled Indians to take up the work ? I do not know if you can get discharged soldiers who will be competent enough to do this work.—*A.*—I think you can and if you cannot you can obtain them from home

Q.—I do not know why you mention discharged soldiers because I do not believe that you can find among them sufficiently skilled artisans to carry on this work of teaching in schools ?—*A.*—A good number are working in munition works now. There is an organisation for the employment of these after the war. A register is now being prepared of the men who are prepared to take up posts in India after the war.

Q.—Of men willing to work in India when discharged ?—*A.*—Yes.

Q.—I suppose these secondary trade schools will be fed by the primary schools. The man that comes into the primary school will go into the secondary school later on or would you put him straight off into the secondary schools ?—*A.*—You will have a certain proportion coming in direct to the secondary school. It would not be fed altogether by the primary industrial school. In fact, the primary school would be for the lower grades of labour.

Q.—You say, " It should be a splendid idea if courses on business management could be started in all university colleges and trade schools and diplomas granted ? "—*A.*—I think that would be a good thing.

Q.—How could you teach business management ?—*A.*—In some of the polytechnics at home they have short courses for business methods and management. I think that is quite possible.

Q.—Surely business management is a natural aptitude and it cannot be taught ?—*A.*—I think you can teach a good deal of the elements of business management.

Q.—A man very highly educated and trained may not make a teacher. He may not be a successful teacher though he may have taken higher degrees in college, and in the same way business management seems to be such a difficult thing to be taught. A business manager is born and not made.—*A.*—A teacher requires a lot of training before he is put into a teaching post. Unless a teacher has training in psychology and educational methods he is not much good.

Q.—You say that there are schools where business management is taught ?—*A.*—In London. One polytechnic in London runs a course for business management—the methods of management. If a man had that course he would be more fitted to run a factory afterwards.

Q.—Can the man be so trained that he can run an oil mill or a tannery ?—*A.*—A knowledge of business methods would be of help.

Q.—He would have to gain expert knowledge in that particular thing afterwards ?—*A.*—Yes. Even though he may have expert knowledge he has no idea of business methods at all and things fail because of that.

Q.—The examination for factory engineers should be uniform ?—*A.*—Yes.

Q.—How are the examination papers to be issued ?—*A.*—You will have centres in the various provinces for the examination. The examination will be held on one day in all the centres and the same papers will be circulated.

Q.—Is there not some fear of leakage ?—*A.*—You will have to guard against leakage. Surely you can do that. It is a practical difficulty that engineers come from other provinces

and cannot be made use of in factories here until they have got a certificate in this province. That is waste of time.

Q.—The man who gets a certificate in Bombay cannot go to Madras and so forth ?—*A.*—No, and in some provinces they have no certificates of any kind.

Q.—As regards the prevention of accidents, does not the factory inspector go round the factory and see that there is provision against accidents by way of guarding against dangerous machinery ? It is provided for in the Factory Act ?—*A.*—Yes. Directly the factory inspector turns his back they may be taken off.

Q.—Once the guard exists and is placed there, what is the reason for removing it ? Money is spent on the thing. I believe that in every factory the factory inspector sees that there is some guard against dangers in machinery ?—*A.*—This is already done. I think that there are still a large number of preventible accidents owing to unguarded machinery.

Q.—I fully endorse the idea of compensation for accidents, and a good deal has been done in this direction. You say, " Japan has already protected its workers in this way and a similar measure of justice is badly needed in this country." Can you tell us what Japan has done ?—*A.*—I have not got the Japanese Factory Act with me, but I could send it to you.

Q.—You know this is done in Japan ?—*A.*—Japan has just brought out a Factory Act, and it includes compensation for accidents.

Mr. C. E. Low.—*Q.*—Has Japan any factory inspectors to speak of ?—*A.*—I do not know, but Factory Inspectors would be needed to administer the Act.

Q.—It works with as few factory inspectors as possible ?—*A.*—Is that so.

Sir D. J. Tata.—*Q.*—As regards housing conditions, you say, " The conditions are deplorable in the extreme. . . . . It should be made compulsory for owners of factories above a certain size to provide dry, clean, well-ventilated and healthy dwellings for their employés at reasonable rents." Is it made compulsory in any other part of the world ?—*A.*—We have not got the same conditions here as in other parts of the world. I am not certain about other countries. The municipalities make provision at home for factory employés. In India the workers are ignorant and should be protected from being exploited.

Q.—Does the mode of living of Indian workmen render this task free from difficulty ?—*A.*—You think it is due to the employés themselves ? I do not think so.

Q.—It is due to the employés themselves. They frustrate any attempt to house them. If you give them ventilation, they will choke up every hole that they can possibly get at : they will overcrowd. . . .—*A.*—It will be up to the employers to have the things done properly. The same plea was not made before the passing of the English Acts.

Q.—I believe the employers are willing to do something for them but it is the labourers themselves who really will not accept the things that are provided for them.—*A.*—I think not. It is not my experience.

Q.—Their habits are not cleanly and they do not particularly care to keep their surroundings clean. For instance when you provide ventilation in any dwelling that you go into they will put pieces of cloth and close the windows and they overcrowd. That is the difficulty. The employer is anxious to improve their condition but the difficulty lies with the labourers themselves.—*A.*—I do not think that is so. Directly you give them good conditions you will improve their habits.

Q.—If they are better educated Our difficulty is want of education.—*A.*—Give them primary education as well, but employers should be compelled to provide proper ventilation and housing accommodation.

Q.—If I were asked to sum up the labours of the Commission I should sum it up in three words, educate, educate, educate.—*A.*—If the operatives are educated they would insist on having decent conditions, but Government should protect them before they get this education.

Q.—You talk of apprentices with cottage industries. You say, " Government orders could be given in some cases on condition that apprentices were taken." Who would take apprentices ? Cottages ?—*A.*—When I say cottage industries I do not mean merely those done in cottages but those done in bazaars, because the men will not teach others and sometimes the industries die, owing to processes having been kept secret.

Q.—It is simply handed down from father to son ?—*A.*—Yes. If Government is going to help such a man one condition should be that he should take apprentices.

Q.—He will never do that.—*A.*—I would not help him in that case, but I would give him every inducement to divulge his secret by guaranteeing purchase of his outturn.

Q.—You say referring to hydro-electric power surveys, " Further investigation should be made into possibilities of obtaining cheap power from canal falls." You mean cheap hydro-electric power ?—*A.*—Yes.

Q.—Then you say, "Water-power should be let to factories by the Canal Department at much lower rates than at present." Do you mean hydro-electric or water-power?—A.—Both, water-power as well as hydro-electric power. The Canal Department insist on getting 50 per cent. of the expenditure they made previously. They are not out to help industries.

Q.—For water-power only?—A.—Yes.

Q.—You propose that these rates should be lowered?—A.—Yes. They try to get good profit on the hydro-electric power too instead of giving fairly low rates.

Q.—Under "General" remarks you suggest calico-printing works. Do you mean power works or hand-printing?—A.—Both.

Q.—You suggest, "Bleaching powder works in conjunction with an electrolysis alkali plant." Where would you place them?—A.—These are only suggestions. We could manufacture alkalis in the province, and bleaching powder would be a bye-product.

Q.—I thought that bleaching powder works should be placed near the sea.—A.—That would be a difficulty here, but not insuperable, I think.

Q.—In the Punjab you could not place them very conveniently?—A.—I am not certain about that.

Q.—You suggest, "Development of fibres available." What fibres and for what purpose?—A.—I do not know the practical details. I have merely noted down the points that I have obtained from factory owners.

Q.—You know nothing of the fibres of this district?—A.—I think there are fibres in the Punjab which could be utilised.

Q.—What can they be utilised for?—A.—Rope-making and paper-making.

Hon'ble Sir Fazulbhoy Currimbhoy.—Q.—You have now been transferred to Delhi? Who is doing your work?—A.—I have been transferred on military duty.

Q.—Who is doing your work here as Inspector of Factories?—A.—No one.

Q.—Is nobody inspecting factories?—A.—Nobody who can do it properly. The Director of Agriculture will be the nominal Factory Inspector.

Q.—How long have you been in this country?—A.—Four years.

Q.—What were your qualifications when you came out here?—A.—I took a first class in the Natural Science Tripos in Cambridge, chemistry, physics, botany and physiology and I took engineering also there and in London and I went into teaching. I took a diploma of teaching at Cambridge also. Then I was in the Home Office for a certain time as Inspector of Factories. I have had both science and engineering training.

Q.—You say, "I believe from the numerous enquiries I have received when on tour there is a great deal of unused capital in the province." Who are the people who have got the unused capital?—A.—Factory owners, cotton-ginning and other factory owners. They are always asking what other concerns they could put their money into?

Q.—Because they are tired of these ginning factories?—A.—Yes. They want something else to put their capital into.

Q.—You say, among the other ways in which Government might assist one is, "Exemption from income-tax and octroi duties on raw material required for new industry." When they make profit should they not be liable to income-tax?—A. They may not make a profit next year. Pioneer factories might be excused income-tax.

Q.—What about the ginning factories? You have stated everything in detail. You say, "During my enquiry into this question I have ascertained the views of many of the prominent factory owners in the province and I feel sure that the majority of them would welcome the adoption of any proposal which would put an end to this evil, which so seriously handicaps the ginning industry and is the main cause of the regrettable sweating of women and children." Is your opinion generally based on the complaints and other hardships from prominent factory owners or have you just put down your own views about that?—A.—Some of them might object to my views, but the majority would welcome any action to prevent the erection of an excessive number of ginning factories.

Q.—You say "The majority of them would welcome the adoption of any proposal." What profits are they getting?—A.—They are on the whole getting about 10 per cent.—Idle ones 10 per cent.—the working ones anything from nothing to 50 per cent.

Q.—We were told the other day that they were not getting more than 3 per cent.?—A.—I do not think so.

Q.—If they are getting 10 per cent. why should Government interfere and protect them? There is no need of protecting them at all?—A.—In some places they cannot get 10 per cent. I am not suggesting protection. I want the pools broken which force up ginning prices and cause all the excessive over-working of women and children.

Q.—If they are generally getting 10 per cent. I do not think that Government ought to interfere. 10 per cent. is a very good rate of interest ?—*A.*—Some have to work their operatives like slaves in order to get 10 per cent.

Q.—They might be dealing in cotton and other things, but others want to have their pool money and keep quiet.—*A.*—Those would object.

Q.—If there are ten ginning factories in a place and if another man wants to put up a ginning factory, he should have to buy one from one of the willing sellers of the existing factories ?—*A.*—Yes. I would stop putting up a new ginning factory at a place where the crop is not sufficient. It is getting worse and worse.

Q.—Worse in what way ?—*A.*—They are going on putting up new factories where there is already an excessive number.

Q.—It is the survival of the fittest. If I want to put up a new factory because I want to buy cotton, why should I not be allowed ? Why should I be prevented by Government ?—*A.*—My idea is to break the pool system and have no idle factories.

Q.—If there are too many, they will break themselves ?—*A.*—They will do their utmost to absorb the extra one by keeping it closed.

Q.—If I am a buyer of cotton and come to your district and put up a gin, you would not allow it ?—*A.*—I would not allow you to put up any gin. You could not make your factory successful in that place where there are already a large number of factories.

Q.—I do not go there to make a profit out of ginning. I go for my cotton trade, and why should I be prevented ?—*A.*—You can gin at the existing factories, or buy an idle factory. If there were no idle factories you would be allowed to erect a new factory.

Q.—Why should I come into that pool ? I do not want to make a ginning profit. Instead of paying more to the ginning factory I prefer to pay more for the cotton ?—*A.*—The pool is not between the cotton sellers, but the ginning people. If the crop was sufficient you would be allowed to erect a new factory.

Q.—I do not want to pay the ginning factory the charges which they fix for the pool, and I would like to see that the cultivator gets a profit, why should I be prevented by Government from putting up my own ginning factory ?—*A.*—I do not see where is the force of your argument. You would not be prevented if the crop were sufficiently large and there were no idle factories for sale.

Q.—Suppose Messrs. Ralli's want to put up a new ginning factory ?—*A.*—They have not any. The cotton owners have not got their own ginning factories.

Q.—I am speaking of cotton buyers.—*A.*—You want an exception made in the case of cotton buyers who want to have a ginning factory. It is not necessary in this province, but you could make an exception in that case.

Hon'ble Mr. H. J. Maynard.—*Q.*—Is it not the case that Messrs. Ralli's have asked for leave to put up a ginning factory ? I think you said that they had none of their own. They have at all events applied.—*A.*—I do not know that. As a matter of fact, they usually lease them.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You say "The complaint is a general one among factory owners, that suitable land is difficult to obtain for industrial purposes, at reasonable prices owing to the operation of the Land Alienation Act ? What remedy do you suggest ? You want a clause in the agreement stipulating that the permit to use it for industrial purposes shall elapse if not acted upon within three years. Is not the Act doing good to the people here ?—*A.*—It might be generally, but land granted for industrial purposes should be so used within a reasonable limit of time.

Q.—You want that factories must be allowed to acquire land ?—*A.*—You want to know the meaning of that last suggestion that I put forward. They get permission to put up a factory but they do not act upon it for years and then blackmail the existing factories.

Q.—You desire that the permission should be only for a limited period ?—*A.*—Yes.

Q.—You say "It would be a splendid idea if courses in business management could be started in all university colleges and trade schools and diplomas granted." You want special colleges for this purpose ?—*A.*—It will all depend on the demand. You may try it in one or two colleges at first.

Q.—You want colleges for the higher technical and commercial education. That is your view ?—*A.*—Scientific and engineering colleges. I would have a polytechnic like the ones in London.

Q.—You say, "It should be made compulsory for owners of factories above a certain size to provide dry, clean, well-ventilated and healthy dwellings for their employés at reasonable rents." Would you apply this only to factories or to all the employers of labour ?—*A.*—Do you mean other than factories ? I am dealing only with factories.

Q.—Railways, Municipalities, Government ?—*A.*—Yes. To Government and Railways also. If there is a compulsory enactment it must be applied to all employers of labour and not only to private factories.

Sir F. H. Stewart—Q.—Your experience is confined to the Punjab and your evidence is dealing solely with the Punjab?—*A.*—Yes.

Q.—Are you also Inspector of Boilers?—*A.*—I have nothing to do with boilers.

Q.—What are the majority of factories in the Punjab that you have to inspect?—*A.*—The majority are cotton-ginning factories and presses.

Q.—With reference to this examination for mechanical engineers' and engine drivers' certificates you think that it would be a good thing if it is made uniform and central. The examination should be run from the headquarters?—*A.*—I would say, have one examination in each province if there is any difficulty about examination papers.

Q.—But they should be set by a central examination board?—*A.*—Yes.

Q.—In Bengal and Madras they have no examination, and they confine themselves to inspection. Do you think that would work in the Punjab?—*A.*—In Bengal a man can be an engineer of a factory without any qualifications? I think that qualifications should be insisted on here.

Q.—The responsibility is on the employer? I do not think there are more accidents in Bengal than in other parts of India?—*A.*—I do not know.

Q.—What department are you working under?—*A.*—Under the Director of Agriculture and Industries.

Sir D. J. Tata.—Q.—You say, "Numerous deaths have occurred from small injuries in factories owing to blood-poisoning. Provision of first-aid by employers should be made compulsory." You mean dispensaries in every factory?—*A.*—In the case of a large mill I would make something of that sort compulsory.

Q.—How would you provide first-aid? Just train a few people?—*A.*—Yes, in first-aid dressing.

Q.—Some men who would know how to utilise first-aid dressing?—*A.*—There would not be any hardship to have a man trained in first-aid in the factory. My experience is that a large number of fatal accidents occur just for the lack of first-aid dressing.

Mr. C. E. Low.—Q.—What is done, as a matter of fact, by any industrial concerns here by way of housing their operatives?—*A.*—In some spinning mills they have chawls, but they are insanitary.

Q.—Are they in towns or outside the towns in the open country, in those places?—*A.*—Here in Lahore? I do not think they have any houses for operatives.

Q.—When you say chawl, do you mean a sort of four or five storeyed building?—*A.*—I do not know exactly the definition of a chawl. It is single storeyed, very cramped and overcrowded.

Q.—Why do they house them? Is it because they are far away from any town or place where the operatives cannot get accommodation or is it to attract them?—*A.*—Partly to have the labour close and handy.

Q.—If they do not build buildings what would happen? How much would a millowner be the worse off?—*A.*—Probably he would not get his labour. It depends upon the particular place. In one district they put them up in order to accommodate labour from the United Provinces. If the owner provides accommodation for his own advantage, then it should be sanitary and not overcrowded. That is my point

Q.—Do the Government or the big railway companies house their labour?—*A.*—The railway workshops have fine quarters.

Q.—Only for the menial staff or the superior staff? Suppose there is a fitter on Rs. 30 or Rs. 40, do they house him?—*A.*—I think they do.

Q.—The housing accommodation looks as if it were the most appropriate for that class of labour?—*A.*—Yes.

Q.—Any other big industrial department of Government? Any arsenal?—*A.*—Not arsenals because they could not have them inside.

Q.—The postal peons and the telegraph peons in Lahore, are they housed?—*A.*—I do not know.

Q.—Are the house-rents very high for that particular class of persons?—*A.*—Yes.

Q.—Have you any idea as to what they are?—*A.*—The general complaint is that they are very high. I think in certain places Rs. 4-8-0, and I do not know whether this class of dwelling would be taken up by factory employés. In mills they charge a nominal charge, Rs. 1-8-0.

Q.—Do you know of any other country in the world where there is an obligation on the employers to house their labour?—*A.*—I do not know that it is obligatory, but in India owners find it indispensable, and it should then be sanitary and fit for human beings.

Q.—Is it the case in the United Kingdom?—*A.*—The Englishman will protect himself.

Q.—Is the English employer obliged to house his labour?—*A.*—I do not think so, but there are other facilities by means of municipalities and other bodies,

Q.—But there is no obligation on the employer as such except that he is to contribute to schemes for the betterment of the lot of employés ?—*A.*—There are welfare boards.

Q.—That is a war proposition, but outside the war ?—*A.*—I cannot say for certain. The factory owner would get the municipality to do it, and he would probably give a grant towards it. In Lancashire it is so I think.

Q.—That would be a purely optional business ?—*A.*—India wants guiding more than England, and ignorant Indian coolies need more protection from unscrupulous employers.

Q.—At present if you restrict the number of gins in a district or elsewhere do you realise that you are creating a valuable vested interest in the gins belonging to the remaining people ?—*A.*—Yes, but the restriction is only partial.

Q.—The result of that is likely to keep up the rate of ginning cotton rather than put it down ? Your average rate for ginning cotton is I understand here 10 annas ?—*A.*—By breaking the pool you would get cheaper ginning.

Q.—There is nothing to stop a pool if you limit the number of gins ?—*A.*—My method is to break the pool, and make idle factories work and increase competition among ginning factories.

Q.—I do not quite see how your method will break the pool ?—*A.*—There would be no longer any necessity for pools. They would not get any advantage. Those that are lying idle now would be compelled to work. If they are not worked for three years the license would be revoked, and the pool would lose its object.

Q.—Do you think as an ordinary abstract proposition that the reduction of the number of gins would have that effect of breaking the pool ?—*A.*—It would prevent an increase in the total number of gins. And instead of working four or five very hard day and night you will have eight or nine working normal hours. The number of working gins would increase, thus increasing competition.

Q.—You propose to stop any new gin starting unless the state of cotton crop warrants it ?—*A.*—Yes.

Q.—That means you will have fewer gins than you would have if you did not apply any measures at all. The fewer the number of gins the higher will be the rate for ginning ? May I give an actual instance. Messrs. Ralli's declined to have anything to do with pools because what they said was that they wanted cheap cotton for export and they wanted to encourage cotton business in every way, which meant more money for the cultivator and cheaper cotton for themselves; and they declined to enter into the pool because they said that the pool business kept up the price of ginning and therefore of cotton. If you limit the number of gins and if you create a vested interest don't you create a protection for the pool that you are trying to stop ?—*A.*—If Messrs. Ralli's broke up the pool it would be an advantage. The licensing system would increase the number of gins actually working. The 3,000 gins now idle would be worked and pools would be unnecessary.

Q.—How are Ralli's going to do that if you do not allow any more gins to come in ?—*A.*—You can put up extra gins for that purpose. My suggestion would result in idle factories being worked or their owners would lose money, while in districts in which the crop demanded it (and Ralli's would not want to put up a factory unless the crop demanded it) new factories would be allowed. (Here the witness explained his statistical tables.)

Q.—Are the existing pools registered under the Companies' Act ?—*A.*—It is not compulsory now. A pool is not a company. It cannot be classed as a company. From my own point of view the operatives suffer and work like slaves under this pool system.

Q.—Is it not a better remedy to show people how to invest their money more profitably ?—*A.*—Yes.

Hon'ble Mr. H. J. Maynard.—*Q.*—As regards your idea of licensing ginning factories, one of your conditions would be the fixing of the charge or the maximum charge for the price of ginning ?—*A.*—Yes. The Cotton Committee is dealing with this point.

Q.—They are as a matter of fact dealing with it in full. As regards the lack of good dwellings for workmen, may I know whether the Dhariwal factory is also guilty of not providing housing accommodation for its labour ?—*A.*—They provide good dwellings. New ones are just being built.

Q.—They are attempting to do it ?—*A.*—Yes, but they have always had good dwellings.

Q.—As regards what you were asked about fibres, do you know that the Agricultural Department is already investigating the question of fibres, but the real difficulty is to get enough water for retting purposes ?—*A.*—I suggest that the Industrial Department would have more opportunities of conducting the work. I merely put this forward as a suggestion.

Q.—Did you know about this enquiry that was going on ? Did you know about the difficulty of getting enough water for retting purposes ?—*A.*—I did not know.

Q.—As regards silk of which you speak of in your written statement it has been dealt with by the Agricultural Department ?—*A.*—Yes, and I think it ought to be continued. If there is a special Deputy Director on the job it would be a good success.

WITNESS No. 370.

MR. E. D. DIGNASSE, *firm of Messrs. Neison, King and Simson, Lahore.*

WRITTEN EVIDENCE.

I propose to confine my remarks to certain aspects of the relation of finance to industry in this province.

It must be remembered that here the cult of joint stock enterprise and even of commercial banking is of comparatively recent growth. The local notoriety of certain failures during the last few years, particularly that of the People's Bank, has perhaps led to the idea that the Punjab has already played a considerable part in the joint stock activity of the country. So far from this being the case, the paid-up share capital of companies registered and working in the Punjab in 1917 represents only 2½% of the paid-up share capital of the companies registered and working in the whole of British India; and the proportion probably did not exceed 3% even prior to the failures mentioned.

Such failures naturally engendered a wide-spread feeling of distrust and uneasiness throughout the province; this has to a certain extent decreased, but it is questionable whether complete restoration of local confidence can be looked for until there exists some machinery for experienced supervision of existing and new joint stock activity, or so long as pending liquidation proceedings involve the payment of calls upon shares with only remote prospect of any portion of the same being returned to the unfortunate investors.

It must be admitted that the Punjab is geographically handicapped in the industrial race, situate—as it is—so distant from the ports and the large coalfields. So far, I believe, as at present known, its indigenous coal is negligible, and it has no metals. These disabilities must needs render the cost of production by machinery and the introduction of products to foreign markets very high. But the possibility of restriction for some time at least to home markets forms no excuse for a supine attitude towards industrial advance. The staple industry of the province is essentially agriculture, and has created the sphere for the allied activities of ginning, spinning, weaving and milling.

Doubtless however the Commission will receive expert evidence as to other important natural resources capable of being exploited by industry to the communal benefit.

As to the amount of untapped capital which is, and economically should be, available for the development of industry, it is difficult if not impossible to form any estimate; but reliable opinion seems to point to the conclusion that the amount is very large.

But for the reasons I have given I regard the Punjab as being, commercially and financially, in a very primitive stage; and the method of linking up finance with industry to the best advantage may differ very considerably from that most adapted to the requirements of other provinces.

In most other provinces industrial activity, upon the lines of limited liability, has made giant strides in several directions; and there exist large firms of Managing Agents having the requisite experience, machinery and resources fully to investigate any new project; and, while it makes no formal guarantee, the hallmark or imprimatur of any of the leading firms upon a new issue is at least evidence to the investing public that the enterprise in question has been carefully investigated, and an earnest of good management.

Such a system has its defects, no doubt, but it has much to recommend it.

In the Punjab, where—it must be borne in mind—many of the educated classes yet regard a career of commerce with disfavour, we have to endeavour to ensure that new projects are thoroughly and carefully investigated both by technical and financial experts, and, fortified thereby, to coax into circulation the capital necessary to finance the development of such projects.

There can be little doubt but that the direct assistance of individual joint stock or private credit banks cannot properly here be sought, at any rate so far as finance for buildings, machinery and the like is concerned. A large portion of the funds of such banks are upon demand or short call, and the banks obviously are not in a position to assume large enterprise risks of a permanent nature. Moreover, once a credit bank is heavily involved in a particular industry or group of industries; it may be compelled, unless prepared to sacrifice much of its original investment, to maintain or even to increase the financial facilities it has offered in the past.

Such a position was peculiarly exemplified in the case of the People's Bank, to which I have already referred. This bank was formed for the specific purpose of promoting

and maintaining industrial enterprises upon Swadeshi lines ; but it stood practically alone in this respect, and, as deposits increased, and it could find no outlet for a wide distribution of its funds and so average its risks, a very high proportion of the funds were employed in one industry—cotton. This, followed as it was by considerable private enterprise in the same direction, led to over-capitalisation of that industry, to the embarrassment of the bank and private capitalists when the inevitable slump set in and many factories were making losses.

Other and potent factors contributed to this failure ; but I consider the main cause to have been the losses incurred by the cotton concerns.

A credit bank, moreover, would not ordinarily have the machinery for the requisite careful preliminary investigation into projected developments.

Attempts to secure the necessary finance by direct offer to the public of shares in a single enterprise by or through an individual promoter, unless such promoter were of known ripe experience and unassailable financial standing, would, I venture to think, now have but a meagre chance of success in this province. But even if successful the interest of the promoter is likely to be limited to making the actual floatation a success, and not to extend to the subsequent good management.

The provision by Government, in the earlier stages of funds, or the grant by Government of special facilities or concessions for the development of particular industries appear to me open to objection in that Government would always be liable to the criticism of favouring certain districts or branches of activity more than others ; and, unless a very elaborate department for the collection and expert use of information were set up, Government would not have facilities for so co-ordinating industrial movements as to ensure the even progress of the whole. So far as my own experience in this province goes, the activities of Government in connection with purely commercial questions have not hitherto been of a particularly helpful nature : to some extent by reason of the lack of such facilities.

In Germany, in which country the association of banking with industry is probably more intimate than in any other, the credit banks have formed themselves into powerful groups for the finance of industries. The combined experience and resources of a group of credit banks enable it, and its direct interest in industrial activities compel it, to include in its functions, enquiries into foreign markets in relation to the industries with which it is concerned, expert investigation into projects for expansion and development, and the actual promotion and control of industrial companies. Under these conditions the individual investor is financing industry, in the first instance, through his deposits in the credit banks.

Such methods would not, I apprehend, appeal to credit bankers in this province or country, as they involve the banks in duties which are ordinarily regarded as outside the sphere of legitimate banking ; and, moreover, although the risks may to a certain extent be averaged, their permanent assumption by credit banks must, as I have already endeavoured to show, constitute a source of weakness to the banks' resources for bill and other fluid business.

In order then to endeavour to ensure complete preliminary investigation and thus to safeguard the potential investor whose capital is wanted for industrial development, there is required, in my opinion, an organisation in the shape of a large financial institution having for its object the examination into new projects, the development of the same until ripe for direct public investment, the maintenance of close touch with local and foreign market conditions, and questions of shipping and rail facilities as affecting the indigenous industries within its sphere. Such an institution would in short combine the functions of a Chamber of Commerce, a research bureau, and a commercial intelligence department with company promoting business, and should be run on purely business lines.

The initial capital required would not be large but the credit and financial backing of the institution would have to be unexceptionable. Such credit and financial backing might, I think, be obtained if the capital were subscribed by the leading credit and exchanged banks, and it is here that banking would become linked up with industry in a manner advantageous to both. The banks would look, not so much to immediate return on their investment as to the indirect benefit accruing from the development of local industries upon sound lines, and the consequential increase in stock finance, exchange, bill and other legitimate banking business.

The subscribers to the capital would of course be represented on the Board of such institution which would employ technical experts for investigation work and business experts for company work.

To provide, upon a funded basis, resources for its activities from the dormant capital of the province, the institution should be empowered to issue debentures to an extent not exceeding in all say 8 times its subscribed capital, such debentures to be guaranteed by Government both as to interest and a sinking fund rendering the debentures redeemable by annual drawings in 30 years. The rate of interest would necessarily be higher than that of Government loans, and would, I think, appeal to a new section of the public. The guarantee would not involve Government in much risk, as it in turn would have the security of the capital subscribed by strong financial houses.

The institution would, as a commercial concern, depend for its expenses, for serving its debentures, and for its profit upon promotion and management fees.

The institution would have to be represented on the Boards of the companies floated under its auspices.

The hallmark of such an institution upon any new issue would constitute not a guarantee of success, but evidence that everything humanly possible to achieve success had been done in the launching and would be done in the management of the venture.

The desirability of the establishment of one or more such institutions, though without Government co-operation, in the United Kingdom after the War has been freely discussed at home ; though for a different reason, *viz.*, to popularise the support of indigenous industries with the investing public which has hitherto exhibited a marked preference for foreign and colonial securities.

As to the effect upon what is commonly referred to as private enterprise, I consider that so far from stultifying private enterprise, the existence of the organisation outlined would be a valuable aid both to the capitalist or the inventor, either of whom might well be at a loss without expert advice, the former as to ways and the latter as to means.

The problem of personnel for the proper conduct of the institution would be admittedly a difficult one, as also the provision of responsible directors for enterprises launched.

If I may speak from my own experience in connection with commercial enterprise, it has been my privilege to meet and learn much from a few Punjabi gentlemen having a wide knowledge and experience of commercial finance, and the necessary singleness of aim to apply such knowledge to the public advancement. But it is my deliberate opinion that the combination of these qualities is at present the exception and the tendency to subordinate real efficiency to personal considerations and convenience the rule. The satisfactory solution of the personnel problem therefore would doubtless connote a considerable European element in the earlier stages, especially so as the functions of the institution must be semi-educational in character.

The activites would necessarily embrace a live interest in—

(*a*) the general primary and manual education of labourers and operatives.

(*b*) the work of industrial and technical schools ; commercial and Accountancy schools and colleges.

The schools and colleges should, I consider, be under the control of a Director of Industries. Such officer, preferably a business man, would of course be in intimate touch with and have all reasonable facilities for inspection of the activities of the suggested main organization and would form the link between Government and industrial progress.

Other collateral activities which suggest themselves are in connection with—

endeavouring to educate directors and potential directors of public companies to a proper appreciation of the duties and responsibilities attaching to that office ;

endeavouring to raise the standard, both of skill and professional conduct generally, of public accountants and auditors.

Generally an institution such as I have suggested would have gradually to work out for itself its most useful sphere and the scope of its operations. Possibly some of its earlier efforts might, with advantage, be directed towards the reconstruction of certain existing industrial concerns which are labouring under varied disabilities. If ever a policy of *festina lente* was indicated, it is, in my judgment, in connection with the industrial expansion of this province in harmony with the circulation to best advantage of its fallow capital ; with a view to the evolution of a highly trained and responsible industrial community.

ORAL EVIDENCE, 10TH DECEMBER 1917.

Sir F. H. Stewart.—*Q.*—How long have you been doing business in this country ?—*A.*—About 10 years.

Q.—And your experience is mostly in the Punjab ?—*A.*—Yes.

Q.—You are in charge of your firm ?—*A.*—Yes.

Q.—In the Punjab do you think that confidence is reviving and that capital will be set free again for industrial investments ?—*A.*—I think there is a tendency towards restoration of confidence, but up to the present I fear it has been very small.

Q.—You think that there is a great deal of wealth in the province which might gradually become available ?—*A.*—I believe there is.

Q.—Can you suggest any means of encouraging it to come forward, or do you think that it must be left to take its course ?—*A.*—I have ventured a suggestion in my written evidence.

Q.—Would you develop that ?—*A.*—It is that I feel that Government aid must be sought if the hidden capital is to be brought into circulation for industrial purposes.

Q.—Government must take the first steps ?—*A.*—I do not say that Government must take the first steps : I say that Government's aid is essential to attract hitherto idle capital for any industrial movement started *ab initio* on a purely business basis.

Q.—What particular form of Government aid have you in mind ?—*A.*—Guarantee of debentures, I have suggested that form already.

Q.—Would you say as the result of your knowledge and experience that special banking legislation is necessary in India ?—*A.*—No, the existing Acts go far enough.

Q.—But you refer specifically to the very small amount of paid-up capital in a great many concerns ?—*A.*—I would qualify that to the extent that a much greater proportion of paid-up capital might be insisted on before the business is started.

Q.—That would require legislation ?—*A.*—Undoubtedly.

Q.—To that extent you think that legislation might be desirable?—*A.*—Yes.

Q.—There is another point : now anyone can use the word "bank" and call himself a banker ?—*A.*—There is nothing to prevent that now.

Q.—Could you suggest any definition ?—*A.*—I have not quite understood your meaning with regard to the use of the name.

Q.—The present position is that anyone may set up a bank or call himself a banker and that might deceive the inexperienced ?—*A.*—Undoubtedly. The term 'bank' is very little understood in this province.

Q.—Supposing it is considered desirable to introduce legislation to regulate the use of the term 'bank' would you suggest any definition ? Would you differentiate between bank and bankers ?—*A.*—I fear I cannot define that off-hand.

Q.—In these liquidations you have come across the work of these concerns prior to liquidation. What opinion have you formed of it ?—*A.*—Usually the material in their branches, that is, their assistants and so on, has been in my experience very poor.

Q.—Do you see any means by which that could be improved ?—Is it a question of dearth of materials, trained material, is it a question of pay, or what ?—*A.*—I think in many places it is a question of want of experience and environment ; absence of large business-houses from which they can gain experience. A manager of a bank usually in the Punjab is a person coming from a comparatively small station, he may have been brought up in a very limited environment, consequently he may lack experience. I mean the branch manager, not the manager at the head office.

Q.—Some of these banks had a very large number of branches ?—*A.*—The biggest one had 70 or more branches.

Q.—Was there any adequate system of inspection of branches ?—*A.*—There was an official of the bank inspecting the branches. I have not seen the system working. Of course that was prior to the liquidation.

Q.—And you think also that an endeavour should be made to raise the standard of competence and conduct amongst public accountants and auditors ?—*A.*—That I think is a highly important matter.

Q.—Can you make any suggestions there ?—*A.*—I think there should be registration of accountants, before the issue of certificates stricter investigation should be made into the abilities, etc., of the candidates for certificates.

Q.—Do you know anything about the Accountancy course that has recently been introduced in the College of Commerce, Bombay ?—*A.*—Not sufficiently to form an opinion. I have only heard of it generally.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—In the third paragraph of your note you say " some machinery for experienced supervision of existing and new joint stock activity, or so long as pending liquidation proceedings involve the payment of calls upon shares with only remote prospect of any portion of the same being returned to the unfortunate investors : " can you suggest any scheme ?—*A.*—So far as experienced supervision goes that would evolve itself from the scheme which I have later in my written evidence put forward.

Q.—Had any of these Indian banks any qualified chartered accountants as auditors ?—*A.*—No, not in the Punjab.

Q.—Have they now got any auditor with qualifications of any kind ?—*A.*—Yes, there are now auditors under the new Companies Act who hold certificates.

Q.—Are they men trained in some institution or do they hold certificate because they have been practising for some time ?—*A.*—In the majority of the cases they have been admitted to a society in virtue of their having practised for a certain length of time.

Q.—Have they any Indian chartered accountant here ?—*A.*—Not in the Punjab to my knowledge.

Q.—What were the difficulties of these banks which failed ? Was it because they put their assets in securities which could not be made liquid at once ?—*A.*—Precisely, that was very largely the cause of the failure.

Q.—Do you think that an industrial bank here will be very useful ; that money can be employed in industries here very safely, and industries can be started if the Government starts an industrial bank here in the province ?—*A.*—If that means that it would be a bank with very long term deposits for example then it is desirable ; but I very much doubt whether it would find any great activity until there is a really good organisation for preliminary enquiry : it is that that is lacking in this province.

Q.—Do you know anything about the industrial banks of Japan ?—*A.*—I do not.

Q.—You say on page 3 of your note that " the schools and colleges should I consider be under the control of a Director of Industries. Such officers, preferably, a business man, etc." Do you think you can get a well-qualified business man to take up the post of Director of Industries ?—*A.*—I think he would be obtainable.

Q.—What do you think ought to be the salary to tempt him to come ?—*A.*—It depends largely on the duties he would have to perform. I should think the post should carry a salary of say 2,000 a month.

Q.—Then in the last paragraph you say " Generally, an institution such as I have suggested, etc., etc., possibly some of its earlier efforts might with advantage be directed towards the reconstruction of certain existing industrial concerns which are labouring under varied disabilities." What are these concerns which you have in mind ?—*A.*—There are several concerns in this province which are labouring under difficulties, some for want of fixed capital, building and machinery, and some for want of circulating capital, stocks and so on, They have all been under some disability for the last three or four years.

Q.—Do you think a college of commerce here will be useful ? Will there be any demand of the kind among the people here ?—*A.*—Yes, I believe there will be.

Mr. C. E. Low.—*Q.*—About this question of restrictions on the use of the word ' bank ' raised by Sir Francis Stewart, do you think that people should not be allowed to use the word ' bank ' to describe their business except under certain conditions ?—*A.*—It is desirable that the word ' bank ' should be more clearly defined. It is at present a very loose term.

Q.—Would you allow the use of the word ' banker ' by a person carrying on banking business in any form, advertisement or letter paper or on his place of business ? Would you allow a man to print his letter paper describing himself as a banker or put up on his place of business the word ' bank ' ? Would you allow him to say that he carried on banking business in the same circumstances or to describe himself as banker ? Why I ask this question is that there have been great differences of opinion on that point

among Chambers of Commerce, Local Governments, etc. ?—*A.*—I think it is very desirable to restrict the use of the description ' banker.'

Q.—That is to say, the ordinary local shroff or bania should be restrained from using the expression ' carrying on banking business '?—*A.*—In my opinion he should be.

Q.—Then what conditions would you make a man comply with before he used this word bank or its derivatives ?—*A.*—I would go so far as to say that he ought to show that his banking firm could be registered. There ought to be registration of banking partnerships.

Q.—You would not necessarily make him come under the Companies Act ?—*A.*—It is desirable he should, but I should not like to kill any private firm of banking provided that such private firm is registered. Only registration of banking firms should be demanded.

Q.—But has there been any particular abuse of the practice of banking at any rate by the ordinary Indian shroff ? Are there a great many instances of failure of misfeasance amongst such people ?—*A.*—They have not come very much within my knowledge.

Q.—There have been most striking cases of failure among companies?—*A.*—They are limited.

Q.—Then you have not considered, as you say, the idea of a definition of banking ?—*A.*—I fear I have not considered that.

Q.—Would you allow anybody to combine other business with that of banking? For instance we have heard of an industrial concern to carry on banking and coach building in Calcutta, I think it had an authorised capital of 10 crores of which only 3 or 4 thousand were paid up ?—*A.*—I should say that the practice is very undesirable.

Q.—Then you say you would like to see some prescription made as to the amount of capital which has to be paid-up : should that have a relation to the authorised or subscribed capital or should it be a definite amount ? Would you say that one-tenth and one-twelfth or something of that sort should be subscribed ; or must the authorised capital be all paid-up ; or should there be say 20,000 rupees or 50,000 rupees definitely paid-up ?—*A.*—Not a fixed amount, but a percentage.

Q.—Have you any figure in your mind ?—*A.*—I think not less than 25 per cent should be called-up within a year in the first instalment.

Q.—Is it the case that the leading banks have only a comparatively small proportion of their capital paid up ? Is that not usually a source of strength in view of the nature of the shareholders ?—*A.*—That is considered a source of strength, but in India many investors unfortunately have at present very little idea of the thing. For example, 25 rupees paid up on a 100 rupees share very often would represent to them merely an investment of Rs. 25 in value.

Q.—You also talk of the question of the low qualifications of accountants : are you aware, that accountants are allowed to practise not only because they are people belonging to recognised association of accountants but also because they are people who have received an absolute or restricted certificate ?—*A.*—Yes, quite right.

Q.—And that as an interim measure to tide over the time before the supply of trained accountants comes along these certificates were given somewhat freely to people who have been actually practising as accountants . Do you mean that these certificates should not be too loosely given ?—*A.*—I think they have been given without consideration of the qualifications.

Q.—Do you consider there are at present too many of them ?—*A.*—No, they are not too many.

Q.—Is there any touting for accountancy work ?—*A.*—Yes.

Q.—Leading to accountants being put in an undesirable position professionally and to undue reduction of remuneration ? I mean undesirably low remuneration inconsistent with the position which the profession has ?—*A.*—Yes, it has a very demoralising effect on the standard.

Q.—You are aware, aren't you, that there is a society of accountants being formed in Bombay ?—*A.*—Yes, I have heard of it.

Q.—Has anybody here so far as you know joined it ?—*A.*—No, not so far as I am aware.

Q.—Turning to points you have dealt with more directly in your evidence, about which Sir Fazulbhoy was speaking, I do not quite see how your proposed Financial Corporation would meet these difficulties in the matter of the supervision of joint stock activities and this question of not fully paid-up share : Would you explain it more

fully ?—*A.*—The question of payment of shares will have to be legislated upon, and the actual supervision would I hope come under the ægis of the Director of Industries. As I have suggested there, he will combine the functions or at any rate be closely in touch with the Registrar of Joint Stock Companies.

Q.—Then you would have his functions merely advisory : how would he educate the opinion of the investors up to the desired point, or how would he educate the management up to the desired point ? Simply by personal intercourse and discussion ?—*A.*—Exactly and by the force of the example of the central institution which would be carried on on sound lines.

Q.—Do you consider that there is a great deal of hoarded wealth ?—*A.*—I believe there is.

Q.—Is your belief based on particular individual instances which have come up to your notice, or is it your general impression ?—*A.*—It is my general impression from being in a large number of stations in the Punjab ; I cannot speak of individual instances, but taking the whole undoubtedly it is very large.

Q.—That is the impression you formed. You are aware that during the last few days an Industrial Bank has been started on a large scale in Bombay : do you think it would be of assistance in the Punjab, and will that in any way cause you to modify your suggestions regarding this development trust ?—*A.*—If I have rightly read the proposed activities of the bank to which you refer, I think that it could get capital in the Punjab, but I do think that even still, as I have said in reply to Sir Francis Stewart, Government assistance will be required ; an ordinary bank will never get it unless Government steps in.

Q.—Is not the first thing for a concern of that sort, whether it is a bank or a development trust, in order to get capital, to put up a certain amount of capital itself ?—*A.*—Yes.

Q.—And to do that has it not got to approve the kinds of industries which it would undertake to help ?—*A.*—Perhaps so.

Q.—And does that not mean a fairly well organised system of experts either employed by or lent to the concern in question ?—*A.*—Yes.

Q.—And do you think that Government should assist to a large extent in that way ?—*A.*—Yes, I think so.

Q.—Do you think it would be desirable for each province to have its own outfit of experts, or do you think you would have an Imperial man whose services would be available or whose advice would be available for the different provinces ?—*A.*—No, so far as the Punjab is concerned I feel that it will want certain experts who would devote their whole time because the conditions in the Punjab are different from those of other provinces : it is more backward for one thing.

Q.—But conditions in the case of chemical or engineering industries are more or less in common in the different parts of this or any other country ; so what you say applies to agricultural industries ?—*A.*—That is so.

Q.—And have not we hitherto been, both the Government and the people, working with the lack of a full range of expert knowledge. Take for instance the case of the glass industry ; it has been pointed out to us elsewhere that you cannot really decide whether to start the glass industry in any particular place until you have examined it from the chemical point of view with reference to raw materials and freight, and what particular kind of glass your local raw materials in the country would be best adapted to, for which you want experts in different kinds of glass ; then there are questions about construction of furnaces and so forth ; it means that you have to obtain four or five experts, and that a general all-round glass man would probably be of no use to you : don't you think that in a case like that it is an argument for an Imperial expert ?—*A.*—For a central officer I should rather think it is.

Q.—Of course you recognise that the institution could not be maintained entirely by Government, it has got to make a living, and to do this it has necessarily to do something in the way of promotion of the undertakings which it is putting before the public ?—*A.*—Yes.

Q.—Do you think that these things could be put before the public equally well examined on a cheaper basis by any other means ?—*A.*—No, I do not think it could be put on a cheaper basis.

Q.—Would you have any method of restriction to ensure that they do not overload these things with too much in the way of preliminary expenses ?—*A.*—Yes, the promotion fee might properly be fixed not to exceed a certain percentage on the issue capital of any new venture.

Q.—Promotion expenses of that sort should necessarily be proportionate to the outlay incurred by the trust because the preliminary investigations of a good many of them would not come off?—*A.*—Preliminary expenses of successful floatations would obviously have to be sufficient to provide for the costs, on average, of abortive researches or enquiries.

Q.—You consider the preliminary expenses on that would not overload the concern unduly?—*A.*—No, they would not.

Q.—In what way do you think this proposal would be superior to a purely Government organisation initiating concerns with a proper supply of expert information? Do you think it would command more public confidence?—*A.*—I think that all forms of Government activities in this direction could be more efficient.

Q.—You mean technical expert aid?—*A.*—That does not connote a very wide range of business knowledge.

Q.—A technical man can also look at these questions from a business point of view?—*A.*—Quite so.

Q.—Cannot Government associate with their departments a man of that type?—*A.*—There would have to be a change in personnel to achieve the desired object.

Q.—I am not quite clear what you are referring to in your note as activities which would necessarily embrace a live interest: are you alluding to the development trust or to the Government Department?—*A.*—I am alluding to my proposed organisation; it would have to evince a very keen interest in all these matters; it has by no means a ready-made scope in this province; it would have to go through the present industrial activities carefully before it undertakes its operations.

Q.—You mean in an advisory capacity to actual or potential employers of labour?—*A.*—And to the Government Departments.

Hon'ble Sir R. N. Mookerjee.—*Q.*—You suggest Government help by way of debentures: and in answer to Sir Francis Stewart you said that you would like Government to help industries by taking debentures, have you any idea as to what should be their proportion to the paid-up capital?—*A.*—I think that Government ought to guarantee debentures, and that these debentures might go up to 8 times the subscribed capital; it might even slightly exceed that amount.

Q.—Eight times the paid-up capital?—*A.*—Yes.

Q.—Don't you think that would be a greater risk than Government ought to take?—*A.*—I don't think so. I hold no brief for bankers, but at the same time bankers would be very careful before they risk their capital and the risk to Government is more remote than theirs.

Q.—Government would in that case be taking considerable responsibility?—*A.*—It takes responsibility for the debentures, but it has behind it the security of the whole capital.

Q.—Would they be equally cautious in lending their money if they themselves were to be responsible for the debentures? Or, in other words, if Government were responsible for debentures to the extent of 8 times the capital, naturally the bank would not be so cautious in their dealings for lending money as if they were themselves responsible for the debentures?—*A.*—You mean it might render the bankers themselves careless? I hardly think so. I think the risk of their own capital would render any banks fairly cautious.

Q.—How then would it help in raising the first capital even accepting all that you say, namely, that Government should be responsible for debentures?—*A.*—It would help in the sense that at present so far as my experience goes to the average Punjabee anything that has a Government guarantee has a very great weight; anything that goes simply as a private bank gets of course certain number of investors, but it leaves the great majority quite cold. Government guarantee to my mind is the attraction that is required.

Q.—I quite see that point as regards debentures, but the capital must be raised before these debentures are raised?—*A.*—I have suggested that the leading banks should themselves put up the initial capital.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—In answer to the President you have said that debentures should be issued up to 8 times the capital and that Government should guarantee interest, what rate of interest have you in mind, is it the rate of interest on Government papers?—*A.*—It would have to be more.

Q.—And this money of the bank will doubtless go to aid industries under the direction of the Board of Industries, is it not?—*A.*—Exactly so.

WITNESS No. 371.

PANDIT HARI KISHAN KAUL, RAI BAHADUR, C.I.E., *Deputy Commissioner for Criminal Tribes, Punjab, Lahore.*

WRITTEN EVIDENCE.

Capital.

Q. 1.—I have no personal experience, but my brother, Diwan Bahadur Pandit Daya Kishan Kaul, C.I.E., has been running a large timber exploitation business, and I can speak from my knowledge of matters concerning his business and of more than one other firm working in the industrial line.

Few people can work wholly with their own capital and great difficulties are experienced in raising capital in the market. Few large capitalists understand the possibilities of industrial enterprise. They prefer safe investments such as G. P. Notes. Owing to the recent failure of companies, it has become extremely difficult to raise capital by floating a company.

I would suggest the establishment of a large industrial bank aided by Government for the purpose of advancing loans to sound industrial enterprises. Projects should be examined by an Industrial Bureau (to be discussed hereafter) before applications for loan are entertained by the bank.

Q. 2.—Capital is now raised either from banks or in the market on hundis. Owing to recent bank failures, the number of banks has diminished. The Indian-managed banks feel shy of investment on industries. The European-managed banks are more business-like, but their hands are generally full otherwise.

Borrowing in the market is unsatisfactory for steady industrial work. Hundis are demanded for short periods, the rate of interest fluctuates violently, and just when money is needed most, the market sometimes becomes tight. Moreover, private money lenders generally ask for an exorbitant rate of interest which is severely prejudicial to the growth of infant industries.

Q. 2 (*a*).—The only suggestions I can make are that :—

(*i*) Government might subsidise promising industries, or

(*ii*) until an industrial bank of sufficient magnitude comes into existence, Government might advance loans to such industries by borrowing in the market.

Q. 3.—*Ginning mills.*—Every cotton-producing centre has been studded with ginning mills with the result that all of them cannot work full time and many of them cannot even make sufficient profit to cover the interest on capital and the deterioration of buildings and machinery.

Government aid.

Q. 4.—So far as I am aware direct financial aid is not given by Government to any large private industrial enterprise.

Q. 5.—I would recommend the adoption of all the eight methods in appropriate cases—

(1) Money grants-in-aid would be appropriate for useful industries which are struggling for their existence.

(2) Bounties and subsidies might be granted to new industries which are necessary but involve risks.

(3) Guaranteed dividends would revive companies and if the industries concerned begin to flourish there is no reason why the expenses, if any, incurred by Government should not be repaid.

(4) Loans with interest should be the commonest form of help.

(5) Supply of machinery on the hire-purchase system would be useful to promoters of small industries, who could not obtain the machinery themselves. Ordinarily a firm would prefer a loan wherewith to purchase the machinery, as the rate of interest would be lower in the latter case.

(6) This would be a *desideratum* where enough capital could not be raised by floating a company.

(7) Guaranteed purchase by Government is an excellent method of encouraging new industries. Preferential Government purchase would be justified where an industry was receiving Government aid.

(8) This is very necessary.

I would lay special stress on methods (1), (4), (6), (7) and (8).

Q. 6.—No supervision will be needed in case of methods 7 and 8. But where Government advances a loan directly or indirectly there should be Government control by way of audit and by the appointment of a managing director or a director with defined powers during the currency of such assistance.

Pioneer factories.

Q. 7.—Government pioneer factories are extremely useful in introducing new industries and tapping the undeveloped resources of the country. They should however be worked as pioneer factories only till such time as the industry is proved to be a commercial success and should be handed over to private individuals or companies as soon as suitable applicants undertake to pursue the industry. They should not be maintained as a source of revenue to Government by denying to private enterprise the opportunity of working and developing the industry.

Q. 8.—Government pioneer factories should, I think, be confined to manufactures which no private capitalist or company is prepared to undertake. There is a very wide scope of action in the line of chemical products, bleached paper, dyeing etc.

The rest of the question has been dealt with in answer to question 7.

Q. 9.—Several industries, such as match factories, wood pulp, glass factories, leather manufactures, have suffered for want of financial facilities. I cannot give specific instances, as I have not sufficient information of details.

Banking facilities.

Q. 10.—The best and easiest way of assisting industrial undertakings is to establish an industrial bank subsidized by Government as has been suggested in answer to question 1 and to foster the establishment of commercial banks to facilitate the disposal of manufactures.

Q. 10 (*a*).—If banks are established on a large scale a Banking law will be necessary, but I cannot make detailed suggestions on this point.

Limitations to Government assistance.

Q. 13.—The object of Government aid being to promote industries, Government should, before subsidising an industry which is already being pursued by private agency, satisfy itself that by doing so it would not be discouraging an existing concern.

Q. 14.—One of the principles which justify free trade being the most economic production of commodities in the country which is best suited by circumstances to a particular industry, there should obviously be no limitation on aid to a new enterprise until it begins to compete on equal terms with external trade. After that stage is reached Government aid can be curtailed or withdrawn in such a manner as to avoid a collapse of the flourishing concern. For years India cannot expect to compete with foreign markets. The development of industries which compete with external trade will therefore, at best, enable the country to produce a fraction of its own requirements, for more than half a century.

Section II.

Technical aid.

Q. 15.—So far as I am aware, little aid has been provided by Government in this respect in the past. Matters requiring technical and scientific advice have, I understand, been referred to Government officers, but for want of technical advice the applicant has met with disappointment, and schemes of considerable importance have been jeopardized. Arrangements should be made to provide technical and scientific aid whenever asked for.

Q. 16.—Except in the matter of agriculture where a great deal of good has been done, little noticeable benefit has hitherto accrued to local industries from researches conducted by Government departments. So far as I am aware the results of such researches are not easily accessible to the public, and no steps are taken to place new discoveries within reach of enterprising men with a view to their being employed in industrial undertakings.

Q. 17.—The system of lending the services of experts will necessitate the whole-time employment of such experts by Government. The services of experts should be lent freely to private capitalists, firms or companies on payment, in advance, of the salary together with a percentage thereof as contribution towards pension and leave allowances. Applications for the loan of services of such experts should be scrutinized by the Director of Industries in order to make sure that expert advice is needed.

Publication of results of researches.

Q. 18.—The results of researches made by Government paid experts, while attached to a private business, should not be published except with the permission of the firm concerned. These results should remain the private property of such firms unless they are unable to take advantage thereof. In the latter case the interests of the firm as promoters of the scheme or invention should be safeguarded before giving publicity to the results.

Q. 19.—Demonstration factories can be useful mainly for cottage industries which can be pursued with little outlay of capital and without any mechanical power or the

collection of labour. Demonstration of fly shuttle weaving at the Sir Louis Dane Weaving School, Ludhiana, maintained by the Salvation Army and at the Government Weaving Farm, Lahore, appears to have done a certain amount of good. Demonstration factories may be opened with advantage for hosiery and industries subsidiary to those pursued at large power-driven factories.

Q. 20.—Yes.

Research abroad.

Q. 21.—See answer to question 16. The discoveries made by the Imperial Institute should be advertised with a view to encourage enterprising capitalists to start new industries. Enterprising men would be glad to launch on schemes of which the commercial value has been established by scientific research.

Q. 22.—Personally I think the country is not sufficiently advanced to benefit, to any appreciable extent, by the establishment of research institutes other than those relating to agriculture. There are hundreds of industries we can learn from the western countries. Until they have been exhausted all energy should be devoted to introducing industries of which the knowledge is certain instead of experimenting in the domain of uncertainty.

Q. 23.—By offering their advice to the Industrial Bureau which I shall propose hereafter.

Q. 24.—The country is not sufficiently advanced for such institutions. The existing research institutes if properly utilized should do for a considerable time.

Surveys for industrial purposes.

Q. 25.—A good deal of material is available but further extensive surveys will doubtless be necessary in order to exploit the mineral and other resources of the country.

Q. 26.—The surveys should be organized by Government, as has been done in the past, but they should be undertaken with the object of facilitating the establishment of industries peculiarly adapted to this country, and the results of the surveys should be widely circulated.

Q. 27.—By the publication of reports and the practical demonstration of results.

Consulting engineers.

Q. 27 (*a*).—Yes—Consulting engineers would be valuable.

Q. 27 (*b*).—But they should not purchase plant or machinery for private firms or individuals nor should they be permitted to charge commissions on purchases made from certain firms at their suggestion.

Section III.

Commercial museums.

Q. 28.—Commercial museums are very desirable. They are the means of advertisement of manufactures and, if properly regulated and kept up to date, afford facilities for small industries to capture distant markets.

Sales agencies.

Q. 30.—Sales agencies are a necessity, so far as minor and unorganized cottage industries are concerned. Certain small industries are pursued in the Salvation Army Settlements and they have always found considerable difficulty in disposing of their manufactured goods. I am myself organizing small industries in my Criminal Tribes Settlements and have to take some trouble in finding good prices for the manufactures.

I would suggest that Government should subsidise sales agenices in convenient centres where any cottage industry or industries exist or are started on a sufficiently extensive scale. To begin with Government might help the promoter of the agency with the cost of maintaining the agency.

A fee might be fixed for sales through the agencies at a percentage of sale price (say Rs. 2 per cent) and as the income of the sales agency increases the subsidy can be gradually withdrawn.

A sales agency with a Rs. 2 per cent. fee can become self-supporting if it disposes of goods to the value of Rs. 200 to Rs. 250 a day. I would therefore not recommend the opening of a full sales agency anywhere unless it can be reasonably expected that there would be a constant flow of manufactured articles of the value of say Rs. 100 a day and a corresponding demand for such articles.

Where the indigenous industries cannot supply so much materials, it would be worthwhile to engage some of the local merchants as sale agents subsidising them with a grant (which may perhaps be equal to the 2 per cent, commission which they would be authorized to charge on the sales).

Q. 30 (*a*).—The utility of industrial exhibitions such as those held recently at Allahabad and Lahore in instructing the general public as to the scientific and technical development of various industries is unquestionable. I would not at present advocate travelling exhibitions on a large scale owing to the expense involved. But canvassers can be employed with advantage to travel with samples of manufactures and to register orders for execution through the sale agencies. District authorities might help the canvassers in exhibiting their goods. Exhibitions.

At a later stage when cottage industries have developed considerably, travelling exhibitions would be very beneficial.

Q. 32.—It would be idle to expect people to organize travelling exhibitions themselves. Occasional exhibitions by individuals or societies in different localities should be encouraged by Government, and when the time comes regular travelling exhibitions should be organized by Government. Till then exhibitions might be held at fairs and large gatherings.

Q. 33.—The exhibitions should aim principally at bringing sellers and buyers into contact, but shows go a long way to attract customers and conduce to the success of exhibitions.

Q. 34.—Yes. It is desirable to appoint trade representatives to represent the whole of India in Great Britian, the colonies and foreign countries. These representatives should possess extensive knowledge of the industrial and commercial problems, and possibilities of the country. Their duty should be to further the cause of Indian industries and commerce. These representatives should be connected with and selected by an Industrial Bureau which should be established in India to organize the industries, and the trade representatives should on one hand keep the Bureau informed of the demand for various raw materials and manufactured articles of India and indicate to it the lines on which the industries should be developed, while, on the other, they should study foreign industries which could be adopted with advantage in India and furnish the Bureau with detailed information about them. Trade representatives.

Q. 35.—Yes.

Q. 36.—Yes. There should, I think, be an Industrial Bureau in each province which should act under the guidance of the Industrial Bureau for India and send its trade representatives to other provinces. These Bureaux should consist of representatives of different industries, who should be mostly elected, but a few members might be nominated by Government to make the body as representative as possible. The Provincial Bureaux might elect members for the Indian Bureau and a few nominated members might be added by Government. The Provincial Bureau should, I think, be presided over by the Provincial Director of Industries and the Indian Bureau by the Secretary or Member in charge of the Department of Commerce and Industries.

Q. 37.—Yes, lists of such articles should be published widely and the articles should be exhibited so as to enable local industries to manufacture them. The information should also be supplied to the Industrial Bureaux whose assistance might be invoked in securing the manufacture of such articles in India so far as possible. Government patronage.

Q. 38.—With a view to encourage local industries all stores procurable in India should be purchased locally instead of being imported and articles which are not manufactured locally should be exhibited so as to induce enterprising capitalists to undertake their manufacture.

Q. 39.—Greater banking facilities, than now exist, are necesary to assist in marketing indigenous products. The banks readily advance money on hundis for clearing goods at the ports on the strength of invoices, but no easy system is at present in vogue for obtaining loans in order to bring the products of local industries into the market at convenient centres. I am not in a position to discuss the comparative merits of the various kinds of banks. Banking facilities.

Section IV.

Q. 40.—The policy of Government should be to charge royalty on the raw material (*e.g.*, forest products) and to allow private enterprise to work the industries based thereon. Government should neither undertake manufactures on commercial lines, nor compete with private enterprise. With a view to encourage the industrial development of the country, the results of researches by Government experts should be made available to capitalists desirous of developing the experiments into commercial success instead of Government monopolishing the application of the results of research. From certain questions asked in the Punjab Legislative Council the other day it appears that the manufacture of turpentine from raw resin has been monopolised by Government in the Punjab Supply of raw materials.

and the United Provinces. This course would be opposed to the policy which I advocate for the development of industries by the people. If competent persons or firms are willing to undertake the manufacture the policy of Government should be to terminate the pioneer stage of the industry and to hand it over to private enterprise, charging a suitable royalty for the supply of raw material.

Land Policy.

Q. 41.—The only check on industrial development imposed by our land policy which I can think of is that of tending to restrict the growth of sugarcane. Sugarcane lands are generally heavily assessed in consequence of the high value of the produce, and the water rates are high, sugarcane being generally included in the highest class of rates. The consequence is that local sugar cannot compete favourably with imported sugar and several sugar factories failed chiefly on that account, some years ago. Owing to a reduction in the import of sugar, the necessity for encouraging sugar refineries has become manifest. A preferential treatment of sugarcane in the matter of water rates would extend sugar cultivation and invigorate the industry.

Section V.

Q. 44 (*a*)—Yes.

Training of labour.

Q. 44 (*b*)—No special steps seem to have been taken, in the industries which I have come in contact with, to improve the skill and efficiency of the labourers. They acquire skill and efficiency by experience and lapse of time.

Industrial schools.

Q. 45.—Industrial schools should, I think, be established at all industrial centres. Half the time should be devoted at these schools to primary education and half to learning the rudiments of industries. Grown-up boys should, in the industrial part of their days' routine, be attached to factories as apprentices and should work there as half-timers. In this manner they should develop into skilled workmen from the very time when they start working whole-time.

Q. 46.—I am now training a number of boys belonging to the Criminal Tribes at the New Egerton Woollen Mills, Dhariwal, the Spinning and Weaving Mills, Shahdara, the Cotton Spinning and Weaving Mills, Bhiwani, and at a certain carpet factory at Amritsar.

Q. 47 and 48.—See answer to question 45.

Half-time schools.

Q. 49.—My experience is confined to Criminal Tribes Settlements where all half-timers receive primary education in the school. The advantage is obvious. I can therefore recommend the establishment of schools on similar lines at all industrial centres.

Control of industrial education.

Q. 50.—The industrial schools should be under the control of the Department of Industries, but the Education Department should advise on all educational matters in the same way as is done by them in respect of the Municipal and District Board schools.

Training of supervisors.

Q. 51.—A training school or schools will have to be established.

Q. 52.—A limited number of scholarships should be offered by Government and more scholarships may be offered for the purpose by the local bodies.

Section VI.

Official organization

Q. 57.—There should be an Industrial Bureau as proposed in answer to question 36. It may be called a Bureau or a Board of Industries and its duties should be to organize the principal and subsidiary industries, to assist in financing them by recommending them to industrial banks or to Government for financial assistance, to obtain concessions for them and generally to assist in the development of industries and trade.

Q. 60.—There should be a Director of Industries and he should be the President of the Industrial Bureau or Board of Industries.

Q. 62.—See answer to question 34. There should be an Industrial Bureau for India under the Presidency of the Secretary or Member in charge of the Department of Commerce and Industry.

Section IX.

Forest Department.

Q. 105 *to* 108.—See answers to questions 7 and 40. So far as I know the Forest Department is at present worked on purely revenue lines. I understand that raw material of various kinds runs to waste for want of facilities for extraction and for want of concession to exploiters who would undertake to start industries connected therewith. My brother, Diwan Bahadur Pandit Daya Kishan Kaul, C.I.E., Patiala, who has vast practical experience of forest exploitation could probably make useful suggestions.

Jail competition.

Q. 109.—None. Jail products are generally sold at rates higher than those prevailing in the market, although the material turned out is generally superior. It cannot therefore be said that jail industries compete to the disadvantage of outside industries.

ORAL EVIDENCE, 10TH DECEMBER 1917.

Mr. C. E. Low.—*Q.*—I understand that you were Census Commissioner for the last census ?—*A.*—I was Census Superintendent of the province.

Q.—Did you form any opinion as to the relative reliability of the occupational figures in the census ?—*A.*—I don't quite follow what you mean.

Q.—If you remember, there was some discussion before the census, on the part of Sir Edward Gait, as to greater detail in regard to occupational figures ?—*A.*—We did go into greater detail, but still it is impossible to say that they were absolutely reliable. We had to depend upon what the people told us.

Q.—In the course of examining the position of hand-loom weavers, one found the following state of affairs all over India generally ; that the consumption of yarn by hand-loom weavers had slightly increased or had remained stationary during the past 20 years, but the apparent number of hand-loom weavers working showed a very large decrease.—*A.*—I cannot say from memory without looking into the figures ; but my impression is that the number of hand-loom weavers was decreasing.

Q.—The figures themselves also, comparing province with province, exhibit very striking differences, which appear to suggest the imperfection of the record, and possibly this may have arisen out of the relative meanings attached to the words " occupation " and " subsidiary occupation."—*A* —Quite possible.

Q.—If a man does a certain amount of things it is put down either as his " occupation " or " subsidiary occupation."—*A.*—Weaving is not a common subsidiary occupation.—One sometimes does weave besides doing other things.

Q.—You mean in this province, it is not ?—*A.*—Yes, but it is quite possible that if a weaver did something else, he would give that as his principal occupation Weaving is not considered a very honourable occupation. It is very seldom carried on with agricultural labour.

Q.—You don't get people weaving and cultivating other peoples' or their own fields ? —*A.*—Very seldom.

Q.—Another point is that in the last census figures there is no distinction drawn in the census figures proper between hand-loom weavers and those who mind looms in a factory.—*A.*—No.

Q.—There was a separate census taken but not at the same time ?—*A.*—There was a factory census taken, but in the general returns we did not distinguish between weavers employed by factories and weavers working at home.

Q.—Don't you think it was rather a serious defect ?—*A.*—I think it would have been an improvement if this had been done.

Q.—Take the question of glass : you can conceive it to be very important for the Industrial Department to know how many people can blow glass, as opposed to making bangles or lump glass. These people are all mixed up together in the census figures.—*A.*—They are. We had not all these details in view at the time ; that is why we did not go into all these details. I am trying to indicate Sir Edward Gait's procedure. It was from that point of view that a special census was taken of factories.

Q.—You suggest that these are small details to enter into ; but look at the ethnological details entered into. Were they as useful as these other details would have been ? —*A.*—Not from the industrial point of view.

Q.—Not from any point of view, except to the scientist.—*A.*—They were investigated from the scientific point of view, and as those were the lines on which they were working in the previous census, it was done.

Q.—You are on special duty in connection with the criminal tribes ?—*A.*—Yes.

Q.—Will you describe what you are doing ?—*A.*—Briefly, it is to reform the criminal tribes, a certain number of tribes whose hereditary pursuit has been thieving, and who at the same time take up occupations as a pretence. The object is to control the movements of these people, to provide them with honest, respectable occupations, so that they should have no cause for thieving, and gradually to reform them. With that object, in this province we have notified certain tribes, and most of them we have restricted to certain limits.

Q.—They were previously wandering about ?—*A.*—Yes, and the worst of these people we are selecting and placing in settlements where we provide them with some kind

of labour. I have three places where I am supplying labour to mills ; one is at Dhariwal, the other at Shahdara, and the third at Bhiwani. I have got other settlements where we are undertaking industries on a very small scale.

Q.—Turning to what you say about trying to engage your men in mill industries, do you take any special precautions or steps to look after them while they are engaged in the mills ?—*A.*—We have our supervisors who go round and try to get them out of their old indolent habits. They are not accustomed to work. They require a lot of persuasion and coaxing. The ordinary mill staff cannot persuade them to work fast enough or long enough. Our men have to be constantly going about and driving them.

Q.—Do you give them bonuses for increased output ?—*A.*—Yes, most of the men work on the piece-work system. We put them on a minimum wage for 2 or 3 months, and then put them on piece work. They are paid according to the quality and quantity of the work.

Q.—How do they compare with the ordinary mill hand at present ?—*A.*—In some cases they earn more than the mill hand ; but in most cases they are not as ingenious.

Q.—They are better physically ?—*A.*—Yes. I don't think, however, that they are physically trained to sustained labour ; but they are getting trained to it.

Q.—How long have these men been working in these mills ?—*A.*—We commenced at Dhariwal in April, and at the other two mills we started in September or October.

Q.—I suppose the hot weather is the most difficult season from your point of view ?—*A.*—They find the hot weather easier because the day is longer, and they have leisure to spend in the morning and evening. It is the winter they don't like.

Q.—Do you think the early dark nights are a temptation to them ?—*A.*—They have to get up early in the morning and don't come back from the mills till late in the evening.

Q.—Do the other mill-hands raise any objection to these fellows being in the place ?—*A.*—No, they don't. At first in Dhariwal there was a little trouble, but this was very quickly got over, and there is no trouble now.

Q.—Are mill-hands in this province of low caste ?—*A.*—They belong to all castes, from Brahmins down to sweepers.

Q.—Do they actually mind machines ?—*A.*—Yes, they handle all kinds of machinery.

Q.—Do men of military caste go into the mills ?—*A.*—Yes.

Q.—Even Kshatriyas ?—*A.*—I think so.

Q.—Then you have got some of these people on agriculture ?—*A.*—Yes, I have got some men on agriculture, and mean to establish a number of agricultural settlements. Government have set apart about 12,000 acres of land. We are going to select the best people as a sort of inducement to others to behave well.

Q.—Some you have got on cottage industries ?—*A.*—Yes, hand-weaving. The Salvation Army are doing a little silk reeling, and I have got some of these people doing rope-twisting : others simple carpentry work, cane-basket making and things of that sort.

Q.—How do you manage to sell their products ?—*A.*—The local man has to arrange it ; he has to get orders.

Q.—Does he have any difficulty ?—*A.*—Yes, I have said that in my evidence. We find some difficulty, but as the work has not developed very much yet, the difficulties are not insurmountable.

Q.—You have not got many goods to dispose of ?—*A.*—No. The Salvation Army have been complaining of that, but they have not much difficulty, as they have a sale agency at Simla, and send all the goods there.

Q.—What kind of loom are you putting them on to ?—*A.*—In most of the places we have Salvation Army looms. We bought some from them and are using them in other places. They are very expensive. They used to cost Rs. 70, but now they cost Rs. 100. We have got some looms in Lahore at the Government Weaving School, and I selected one or two specimens and will adopt those.

Q.—You are aware that you can get an ordinary fly-shuttle slay for Rs. 10 or Rs. 12 ?—*A.*—From where ?

Q.—From various places in Madras.—*A.*—I understand that we can get it fairly cheap here. The figures given us were Rs. 20.

Q.—That is the figure for the complete loom.—*A.*—They promised to give it to me for Rs. 20, and I intend to get some of those.

Q.—In connection with your criminal tribes you need to start some sort of sale agency ?—*A.*—Yes.

Q.—Have you seen anything of an institution of that sort at Cawnpore ?—*A.*—No.

Q.—Or of the organisation that has recently been set up in the United Provinces, the arrangement for sales in the North-Western part of the Province ?—*A.*—No.

Q.—In answer to question 41, you say, " Sugarcane lands are generally heavily assessed in consequence of the high value of the produce, and the water rates are very high, sugarcane being generally included in the highest class of rates. The consequence is that local sugar cannot compete favourably with imported sugar, and several sugar factories failed chiefly on that account some years ago." Is that the only reason why local sugar cannot compete favourably ?—*A.*—I mentioned that because I was asked if our land policy had any effect. I don't say that is the only cause.

Q.—What are your rates here for sugarcane land ?—*A.* About Rs. 7.

Q.—Do you know what the rates are in Bombay ?—*A.*—I suppose very much higher.

Q.—Up to Rs. 60, and the industry is very flourishing.—*A.*—I mentioned the fact as I heard it said by some of the people connected with certain sugar factories that they had failed because the price of raw sugar was high here.

Mr. Low.—That is rather a common experience in places like Bihar, where there is no irrigation.

Hon'ble Mr. H. J. Maynard.—*Q.*—I understood you to say that agriculturists don't generally do any weaving, and weavers don't generally do any agriculture ?—*A.*—Yes.

Q.—Is that quite correct : at harvest time don't weavers all go out ?—*A.*—That is an exception ; anybody will go. What I mean is they don't regularly do other work.

Q.—You don't think that any class of weavers regularly goes out and does agriculture ?—*A.*—No.

Q.—Is it not also the case that in agriculturists' households a certain amount of weaving is done for the family requirements in the way of cloth ?—*A.*—No, they do spinning and certain other processes subsidiary to weaving ; but the weaving itself is done by the village weavers.

Q.—So it is only at harvest time that weavers go out ?—*A.*—At harvest time anybody will go out. Even Brahmins will turn out and do a little harvesting.

Q.—There was some reference to the cost of looms ; perhaps you did not know that the Industrial Department can provide slays at Rs. 10.—*A.*—I meant the whole loom cost Rs. 20. I wanted to buy looms and the cheapest recommended to me was Rs. 20. The slay alone would be worth Rs. 10.

Q.—About this matter of sugarcane, what would you take to be the average outtu n for an acre of cane of *gur* ? Would 20 maunds of *gur* be a fair average to take ?—*A.*—Yes.

Q.—And how much would the value of that be, approximately, in normal times ?—*A.*—Rs. 5 a maund. In my own village I take the total outturn at Rs. 100.

Q.—The water rate is either Rs. 7-8-0, and in very few places as much as Rs. 10, so that it would be one-tenth in proportion ?—*A.*—The water rate is based not only on the amount of water supplied, but also on the value of the crop.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—What are your criminal classes ; have they got any religion, society, etc ?—*A.*—I have got several tribes of different classes.

Q.—Where are they found ?—*A.*—All over the province.

Q. Wandering about ?—*A.*—Some wandering, some settled. Some are Muhammadans, but they are as good thieves as the others.

Q.—As a class they are thieves ?—*A.*—Yes ; then there are others who have a very rudimentary sort of religion. Some are Muhammadans, and others call themselves Hindus.

Q.—They go about the villages and loot ?—*A.*—The wandering gangs move about. They are supposed to live by begging. They go into the villages and beg, and find out which are the places to attack at night. Then at night they will slip out and commit thefts.

Q.—At the Dhariwal mills how many men are working ?—*A.*—I have got a total population of 1,280, of which there are about 400 odd workers in the Dhariwal mills.

Q.—Did they ask for these men, or did you supply them and ask them to take them in ?—*A.*—I wanted to provide occupation for these people. His Honour happened to go there by chance and he suggested that there was a great opening in this place; I came to an arrangement with the Dhariwal mills and established this settlement there.

Q.—Have you taken up land for that settlement ?—*A.*—We have acquired land for them under the Land Acquisition Act. They have paid for it. They are building houses for residence. The settlement is in our control, as we have placed the men there.

Q.—Are they now free, if they want to go somewhere else ?—*A.*—No, they are under the limitations of the Criminal Tribes Act.

Q.—For how many years ?—*A.*—Till they earn exemption. Under the rules, if for the last 10 years they have not been convicted of any offence, or suspected, and if the District Magistrate considers them fit to be exempted, they are exempted.

Q.—Supposing they want to go and work somewhere else ?—*A.*—Some may be absolutely free after 2 years, if granted exemption. Everyone of them can earn exemption after 10 years. It all depends upon whether he has committed an offence or been suspected of an offence within the last 10 years.

Q.—I just want to know if they will have to live in the Dhariwal mills for 10 years.—*A.*—Ten years or less, until they have earned exemption. It may be in six months or two years. It will depend upon their character.

Q.—Are they on night duty while working there ?—*A.*—No, under the rules they are not supposed to work more than 10 hours a day, and we make them work for 10 hours during the day, not during the night.

Q.—You want large industrial banks ? What capital do you think would be necessary for the Punjab ?—*A.*—I want it to be a large bank, large enough to supply the needs of the industries that may come up in the Punjab. I am not an expert on that point, and am not in a position to advise.

Q.—Have you experience of your brother's business ?—*A.*—A little. Of course I come to know about his business now and then.

Q.—Then you say, in answer to question 22, "Personally I think the country is not sufficiently advanced to benefit to any appreciable extent, by the establishment of research institutes other than those relating to agriculture." I suppose by the "country" you mean the Punjab only ?—*A.*—Yes. I don't mean India. I don't deprecate the establishment of research institutes. What I say is that we ought to devote much more of our energy to what information we can get at present.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Don't you think the research should go first ?—*A.*—I don't say there should be no research institutes, but what I say is that we have got sufficient information in our hands to develop our industries from the research institutes already established in our country and in other countries. We should make use of our information. I should like the industries to grow up to the standard at which the more developed research institutes would be needed.

Q.—Then you are prepared to alter that ; you have no objection to have research institutes first ?—*A.*—I am talking of my own province, and, as far as I can see, the industrial development of this province is so backward that there is plenty of room for development before we begin to need research institutes.

Q.—Don't you think that by having good research institutes, it will give a stimulus to industries ?—*A.*—Unfortunately that is not my own information. What little I know about the effect of research institutes on the development of industries in the past, I don't know that they have done all the good that they should have, except in the agricultural line.

Q.—But you have no research institutes except those pertaining to agriculture ?—*A.*—There are Imperial Research Institutes which are supposed to benefit all the provinces of India.

Q.—Was not anything that may be found in the Punjab the subject of the research institutes ?—*A.*—I have no experience of that.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—In answer to question 2 you say, "The European-managed banks are more business-like, but their hands are generally full otherwise." "Otherwise" what ? In financing crops ?—*A.*—I don't know, but they are

having lots to do. I know of half a dozen cases in which European banks have been approached and have come forward in a most business-like manner. In most cases it was found that they had too many things on their hands, but still they did provide for these applications.

Q.—And therefore you want that until industrial banks of sufficient magnitude come into existence, Government might advance loans, etc. In what way should they borrow ?—*A.*—By raising loans.

Q.—Then you are for a sale agency with commission ?—*A.*—Yes.

Q.—In answer to question 34 you say, "It is desirable to appoint trade representatives to represent the whole of India in Great Britain, the colonies and foreign countries." Don't you think that Indians ought also to be employed as representatives ?—*A.*—I have not excluded Indians.

Q.—Don't you think Indians are preferable ?—*A.*—I don't say preferable. You should have the most suitable man, whether Indian or European does not matter.

Q.—Do you want an Industrial Bureau or a Board of Industries ?—*A.*—Yes, you may call it whatever you like.

Q.—You cannot suggest its constitution ?—*A.*—No, I have not had time to go into it.

Q.—In answer to question 40 you say, "From certain questions asked in the Punjab Legislative Council the other day, it appears that the manufacture of turpentine from raw resin has been monopolised by the Government in the Punjab and the United Provinces." What was the answer of the Government ?—*A.*—I don't exactly remember. I just read the question and did not read the answer. I mention that as an instance in which a pioneer factory may be converted into an ordinary factory.

Q.—What do you suggest ; should this factory be sold by Government and given to the highest bidder ?—*A.*—I am not in favour of the highest bidder system.

Q.—Don't you think there is a danger of preference, in the case of approved parties ?—*A.*—There is a likelihood. In the open auction there is the likelihood of getting persons not able to run it.

Q.—But if the industry proves a success, men can start similar industries ?—*A.*—But a man may have money, be a bad manager and have no business experience and may ruin the whole concern.

Q.—You may ruin that factory after Government had proved that it is a thing which pays. If a man mismanaged it and sold it off, another man would take it over. Who knows that even he can work it to a profit ?—*A.*—It will be connected with a certain amount of control by Government. Government has to supply the raw product. Government sells this factory to the highest bidder and says, "We arrange with you that we will supply you with the raw products for the next 5 years at a certain price," and that man buys it for 2 lakhs, ruins the whole concern, and for 5 years Government cannot sell the raw products to anybody else. The whole industry suffers. Instead of that, if Government gave it to an approved man who is likely to keep it going successfully, it would be better.

Q.—At what price should Government sell the raw materials ?—*A.*—I have said there should be a royalty. Government should arrange to allow the man a reasonable profit.

Q.—What do you call reasonable ?—10 per cent ?—*A.*—Yes, anything from 10 to 20 per cent. No man would come and take up a new industry for less. In the case of an old industry, he would take it up for 10 per cent.

Q.—It has been proved ; it is not a new industry ?—*A.*—It has been proved by Government. People have a sort of idea that anything controlled by Government means the perfection of supervision.

Q.—Don't you think that if Government passes raw materials and gives them to this factory to work at a profit of 20 per cent., the result is to make the revenue of the country go into the pocket of one man ?—*A.*—It is a question of bargaining.

Q.—But you say, give it to the approved party ?—*A.*—Government is making so much per cent.

Q.—But Government means the people of the country, and that is one individual ?—*A.*—Still Government expects to make a decent profit over that investment ; why should not the other man expect a portion of that ?

Q.—Then you say, " Jail products are generally sold at rates higher than those prevailing in the market, although the material turned out is generally superior." Suppose in the jails, something, say, printing, is done by power, don't you think that would compete with outside printing ?—*A.*—My own information about jail presses in the Punjab is that their rates are higher than the rates prevailing in the market. I am subject to correction. I think jail press rates are higher than those of the market.

Q.—Then jail products are fetching higher rates because the material is good ; but printing is quite a different thing ?—*A.*—I think the general principle is that the rates are fixed a little higher than the market rates.

Q.—Then how can they sell if the rates are higher : do they still get the sales ?—*A.*—They sell because all Government departments are supposed to buy from them ; in fact are bound to buy. That is one of our grievances. We would spend less if allowed to buy in the market.

Sir F. H. Stewart.—*Q.*—What are the numbers of the criminal tribes ?—*A.*—The total number of tribes is about 150,000 males, females, and children. I am talking of the Punjab alone. They are spread all over India, and there are as many in the United Provinces, Rangoon and Central India. There is a large number in Bombay and Madras.

Q.—This is the first serious effort made to deal with them ?—*A.*—The first comprehensive effort. We have taken action throughout the province. They have got settlements in the United Provinces, Bombay and Madras.

Q.—Do you try to educate the children ?—*A.*—Yes, education is compulsory, and every boy is supposed to go to school. I don't say every boy does go, but we are trying to send every boy to school.

Q.—I suppose you have got a special grant for the necessary expenditure from the Punjab Government ?—*A.*—Yes.

Q.—You have 3 classes ; there is a sort of reformatory settlement, an industrial settlement, and an agricultural settlement ?—*A.*—Yes.

Q.—So that, in the course of a generation, you will perhaps have very largely done away with the criminal tribes ?—*A.*—In the course of two generations.

Q.—I see you suggest that, where Government gives financial aid, you might appoint a Managing Director. Do you think it would be wise to give him powers beyond those of an ordinary Director : would it not be apt to interfere with the business management?—*A.*—I should give him definite powers. I have very little knowledge about the work done by Directors ; but still, from what little I have heard, I understand there are certain difficulties which Directors experience, and therefore a Director with more definite powers would be more useful. I agree that audit would be a far more useful form of control.

Q.—In regard to Government experts, you think that the result of their researches should remain the private property of the firm ?—*A.*—Yes.

Q.—Would that be fair, if these were Government employés entertained in the public interests ?—*A.*—I would make the firm pay.

Q.—But even so they are public servants ?—*A.*—Supposing I discovered something which I don't know what to do with, I ask the assistance of the Government expert, and obtain certain results. Don't you think I have a right to the benefit of it ?

Q.—Would that not be met by reserving their information for a certain period, say 2 or 3 years ?—*A.*—A year is very little. I don't mind the thing being made public after a sufficient length of time.

Q.—Under Q. 105 to 108 you say, " I understand that raw material of various kinds runs to waste for want of facilities for extraction and for want of concession." What do you mean by " want of concession ? "—*A.*—A man who takes up some kind of raw material wants Government to give him some concession to work it, some concession in terms.

Q.—In regard to your answer with reference to difficulties of transport, you would very much like to see an engineering branch and a commercial staff attached to the Forest Department ?—*A.*—Yes.

Hon'ble Mr. H. J. Maynard.—*Q.*—Before you took over this comprehensive system of the treatment of criminal tribes, they were subject to some restraint ?—*A.*—Yes, in different localities.

Q—Although subject to restraint, no arrangements were made for their subsistence ?—*A.*—No, and none for their reformation.

Q.—So one of the important changes that was brought about by locating them at Dhariwal is that an opportunity is given them of obtaining a subsistence which under the other system they lacked. ?—*A.*—Yes.

WITNESS No. 372.

RAI SAHIB PANNA LAL, *Proprietor, Upper India Glass Works, Ambala.*

WRITTEN EVIDENCE.

Glass Industry in India.

People read that glassware is made by melting simple materials, like sand and soda, etc., and by blowing the molten mass into moulds of iron or wood or by shaping it without them. They also saw that glassware was imported into the country to an enormous extent. The patriots decided to arrest the foreign trade in this line by starting glass factories in India. The principle of joint-stock companies, also of foreign growth, was called in aid, and a start was made here and there. But what a rude awakening ! when furnaces made on foreign plans did not produce glass of the right quality, and when foreign labourers from cold climates with the assistance of country-bred Minhars after being trained to blowing, turned out unremunerative work. This result discouraged the first band of pioneers, whose means of perseverance to further efforts in the shape of inadequately subscribed capital were woefully limited. Factories, one after the other, were closed ; some of them were sold many times less than the cost price. Failure was written in large glaring letters on the door steps of glass factories, and proved a sufficient cause to frighten away willing capital. First stage.

For some years a number of glass furnaces remained unignited. But some spirited people, prompted by locally trained but unemployed blowers and newly imported foreign workmen, restarted the works, doing blowing work in the cold months of the year and closing them temporarily during the intense heat of the summer months. These second efforts seemed to be at their last gasp, when the present war broke out, and gave them a new lease of life. Second stage.

The question arises, " will this new lease of life be permitted to the present glassworks in the country after the war ? Will somebody—either the Government or the general body of consumers—come to their assistance and protect them from the crushing competition of vastly organised foreign manufacturers ? If reassuring answers were confidentially given to these questions, the future of glass industry in India will take on a promising development. More and better equipped glassworks will come into existence, and meet the demand of the country in glassware.

In my paper on Glass Manufacture, contributed to the 12th session of the Indian Industrial Conference held in December 1916, some of the causes of failure were mentioned in detail, and remedies were suggested to overcome them. I recapitulate them briefly as under :— Inefficient management and scanty capital.

(1) Promoters of the pioneer glass factories did not understand or had no grasp of the essentials of glass industry, and there was a lack of expert management familiar with local conditions and sources of raw materials.

(2) Foreign labourers had to work in unsuitable climate under unsympathetic management.

(3) Men of this country trained by foreigners were not accustomed to work at gas or other types of furnaces, having very high temperatures.

(4) New Indian blowers, who previously made bangles at their old-fashioned furnaces, with comparatively low temperatures, during the cold months and sold them by hawking in hot months, deserted work on account of heat, and left the glass factories to shift as best they could. These idle months caused loss to glass factories.

(5) Subscribed capital barely sufficed for plant and buildings, and left practically nothing in hand to tide over the initial reverses and difficulties.

(6) Workmen from the Minhar class, themselves combined workmen and masters, resented the passing of profits of this industry into undesirable hands.

(7) Capitalists are generally wed to particular places. Better sites from the point of view of colder climates, proximity to raw materials, cheap labour, or distributing centres do not appeal to them.

(8) Last, but not the least, came the blast of foreign competition that took away whatever of vitality was left in this infant industry.

In the following statement I propose to suggest, to the best of my knowledge and experience, such remedies as will minimise the aforesaid defects and difficulties.

Financial aid to industries.

I have already stated that the failure of the first joint-stock companies, engaged in glass industry, scared away capital. The second efforts, with a couple of exceptions, were made by private individual capitalists. The existent glass factories have not yet recovered their credit. People are unwilling to lend their savings to glass manufacturers or to enter into this industry on their own account. This reluctance on the part of capitalists may be removed by the spread broadcast of reliable information through the agency of Provincial Departments of Industries. These Departments, as at present organised, have not the means of collecting commercially reliable information, and individual manufacturers will not, I fear, help them in this respect, as their doing so will expose them to the positive risk of bringing into existence rival manufacturers. Therefore the next best thing that a Provincial Department of Industry can do to surmount this difficulty is either to enter into a negotiation, with a promise of monetary compensation, with an existent glassworks, to so work the factory as to furnish reliably audited information to the Government for general publication and at the same time to provide facilities for the training of blowers and other necessary staff for the assistance of prospective manufacturers, or to start on Government account a demonstration glass factory at Lahore. The first arrangement for a period of three years will cost Government about Rs. 30,000, and the second one nearly Rs. 50,000, the latter with a prospect of being recovered in the course of 5 or 6 years.

Government assistance.

Government policy with regard to financial assistance to glass or any other new industry has remained so far undefined. Some years ago the Punjab Government twice considered the case of my glassworks at Ambala City and recommended to the Government of India for sanction a certain graduating sum of grant-in-aid in consideration of my glassworks undertaking to train a number of apprentices as blowers, etc. The Government of India viewed this proposal in the light of embarking upon protection, and rejected it as being against its present policy. Here was a clear case for Government of India's active support, because the kind of glass that I was manufacturing did not come from the United Kingdom or from any part of the British Empire ; Germany, Austria and Japan were the only competitiors. But this was not taken into consideration. In this case no revision of the Imperial customs tariff was involved. The proposal was for assisting a new struggling industry for four or five years only. This is my experience of financial aid by Government to industrial enterprise.

In my opinion Government can assist old or new industries by making for a fixed number of years—

(1) money grants-in-aid ;

(2) loans on low rates of interest, through the agency of a proposed industrial bank ;

(3) supply of machinery on hire-purchase system, such as automatic blowing machines to glass manufacturers ;

(4) preferential Government purchase of indigenous products for a limited period of *ten* years.

When Government elects to assist, in combined forms mentioned above or in one of them, especially when hard cash is the medium, it is right for Government to insist that its financial assistance is utilised for objects for which it is made. This object may be secured by reserving to Government the right of having a factory's accounts audited half-yearly and of continuing or withdrawing its assistance as the auditor's report may reveal a factory working up to accepted stipulations or against them.

Pioneer factories.

When the Industry Department of a province or of the Central Government is approached by a person of substance or a group of similar persons, ultimately willing to purchase, if commercially successful, Government may pioneer a new industry, and develop it within 3 or 5 years as the nature of industry may demand. The Government should undertake not to publish the results of its conduct of business until the purchasers by prior agreement have been in possession for a term not less than 5 years, or unless the purchasers have been compensated for by way of reduction in the price ascertained after allowing depreciation on plant and buildings.

I am not in favour of Government turning successful pioneering experiments into permanent Government enterprises. Government is welcome permanently to engage in industrial enterprises, if they be of the nature of "Public Services," and when Government can offer better services on cheaper rates than private management. In the words of John Stuart Mill I beg leave to submit—"When a business of real public importance can only be carried on advantageously upon so large a scale as to render the liberty of competition almost illusory, it is an unthrifty dispensation of the public resources that several

costly sets of arrangements should be kept up for the purpose of rendering the community this one service. It is much better to treat it as a public function ; if it be not such as Government could beneficially undertake, it should be made over entire to the company or association which will perform it on the best terms for the public." The first sentence of the quotation lays down what services a Government should perform, and well applies to railways, the telephone and telegraph, the supply of water, gas and electricity, and the second one defines the field of private enterprise.

Financing agencies.

At present there is a gap between the men with money and the men with practical ideas. Both classes of men are necessary to a new industry. A third class of men able to influence the first and capable of understanding the latter has yet to come before the gap is bridged over. This third class should be composed of men, who are in a position, by virtue of commercial and technical expert knowledge, to bring together in active sympathetic co-operation the first two classes and to lead by efficient guidance the forces of production to successful results. These unifying factors, assembled by careful selection, should have seats on the Board of Directors of a Provincial Industrial Bank. Such a bank should have for its chairman the provincial Director of Industry, and a whole-time *man of business* appointed by the Local Government as its manager. The capital may be partly subscribed by the public and partly by the Government, the latter to be withdrawn when the public comes forward to replace it, without prejudice to the position of official chairman and manager. This arrangement should have the sanction of special legislation. In other respects the proposed bank should be conducted under the existing law. A bank so constituted *will inspire public confidence*, and be the means of assisting old and encouraging new industries.

Cottage industries.

These domestic industries can stand on their legs only when the labour efficiency of those who engage in them is so advanced as to compete on equal terms with factory-made articles or articles made by highly efficient foreign workmen in quality and price, or when State protection is applied, like America with respect to silk manufacture, in their favour to exclude by prohibitive tariff similar articles from the Indian markets. This government action, applied for a number of years, will promote the development of handicrafts and enable the workmen to gain by practice increasing efficiency as time goes on. A man cannot have efficiency without long practice, and a poor workman cannot persist in wasteful practice, unless he is cheered in his labour by a demand of his articles and at the same time shown the way how to make improvements. Efficiency of cottage workmen will come from industrial schools, and demand from co-operative stores. So long as these essentials do not come with State protection at their back, the lot of cottage workmen will not ameliorate.

Co-operative societies.

Credit co-operation is spreading in the country, and is doing a great deal of good. Co-operation in trade, agriculture, and production remain to be tried by the public. These movements have received considerable support, and met with a fair amount of success in the United Kingdom, France, America, and Germany. Unequal distribution of profits between the capitalist, employer and employés has been the incentive to the growth of co-operative societies. Already the occurrence of labour strikes in India clearly indicates the existence of this economic disease and calls for an early diagnosis and remedy. Will " conciliating the conflicting interests of the capitalist, the worker, and the purchaser, through the equitable division among them of the fund commonly known as profit," cure the disease ? The three classes of people concerned prescribe the same medicine in varying doses. As every one of them is interdependent, it is in the interest of each party that the spirit of ' give and take ' should be the guiding principle in economic adjustments.

Co-operation in trade is the easiest form, and being of distributive nature, attracts member-customers, who always prefer to deal with their stores, knowing that whatever little higher rates they might pay would come back to them as dividends according to the amount of their purchases.

Co-operation in agriculture might start with labour in the fields at the time of weeding and harvesting, and when village people realise as to what joint action means, they may be shown the way to join their individual resources and to invest them in the purchase of time and labour saving agricultural machines for the common use of the village community. Preaching and persuasion in these respects may be undertaken by the Department of Agriculture.

Co-operation in production by artizans' societies, without outside aid will not get a start. In addition to the amount of capital a society may raise among its own members, the co-operative credit societies should further assist them with the remaining necessary capital. The co-operative stores should buy their products as a matter of preference, and the Public Works Departments or Local Public Corporations should assist them with contract work rather than the capitalist contractors.

Trade guilds.

Trade or craft guilds are old institutions in India, and they have weathered the storm of centuries by restricting their membership to their kith and kin, and have been too conservative to admit outsiders and to move and change their antiquated methods of work. The Government can assist them to learn improved methods by providing for them elementrary instruction in mechanical and ornamental drawing and practical manual training in their ancestral handicrafts. For this purpose municipalities and district boards, with financial help from Local Governments, may be invited to start industrial schools in important centres of industries. The training should be *free* and *compulsory* up to 14 years of age, when they could begin their course of apprenticeship in workshops or under competent men of their own caste for a term of 5 or 3 years according to the nature of the handicrafts the apprentices may be engaged in. Personally I shall like them to enter workshops, where a system of a graduating scale of wages combines with an up-to-date training in the use of modernised tools and methods, whereas under individual workmen provided with rude tools they go through more drudgery than training.

Technical aid to industries.

As a glass manufacturer I have received no technical aid, nor I think was the Government in a position to offer any ; on the other hand I placed as much information as I had to impart at the disposal of the Government.

Agriculture is the only industry that has received in recent times any attention from the Government. Even in this respect Government action is very much confined to a limited area. Government should enlarge its field of operations, and carry them to the very door of farmers in every district and prove their superiority by demonstrations in selected areas under different climatic and physical conditions. Every cultivator should be permitted to feel that in the staff of the Agricultural Department he has kind expert friends, who will help him out of difficulties if he made an appeal to them.

For an empire of the size of India, no machinery or staff is too expensive, if all the research work that the country needed were carried on here in India. The study of local conditions at first hand and on the spot *will ensure more accurate results and immediate benefits* than if it were undertaken at a distance of thousands of miles under totally dissimilar conditions.

Publication of results of researches.

Analytical work performed by Government experts on payment by private firms should, as a matter of right, be the exclusive property of the latter, and should not be made public without the consent of the firm concerned.

Industrial surveys.

Industrial surveys should now be undertaken, each by a specialist, with the object in view that the survey is to be transformed into a pioneer industry either by the Government or the public. The results of a survey should be published in trade journals of the country, if it was initiated by the Government or they may be communicated to the person who moved the Government in this behalf. The expert surveyor should be associated in his work by a selected or interested man of business, so that the former could receive the benefit of his advice in commercial matters. I shall mention for instance the proposed manufacture of soda and its by-products in this country. The sources of raw materials, their chemical composition, cost of plant and buildings, amount of working capital, manufacturing costs, quantity of outturn, condition of home and foreign markets, and earnings of undertaking may be made the subject of a survey.

Consulting engineers.

A consulting engineer under Government service may be further remunerated by a fixed amount of commission when machinery is purchased on his advice or through him. The institution of consulting engineers is exceedingly useful, and when conducted by men of experience it renders much desirable help. But these should be under private management. My experience is drawn from firms of the latter description. The Government may entertain a consulting engineer in each province, and attach him to the Board of Industry.

Assistance in marketing products.

Commercial museums.

Commercial museums, if kept up-to-date, render great help to manufacturers, middlemen and consumers, particularly the first two classes. These should be spread over important centres in the country, such as Delhi and Amritsar in Northern India. A classified catalogue, showing manufacturers' names, brief description of articles, wholesale and retail prices and trade discounts should be periodically corrected, published and sold for a nominal price. The ministerial staff in charge of a museum should be men with commercial training, well paid for their work ; ordinary clerks will be of no use. Museums may be placed under the control of Boards of Industry. The collection in museums should be both of foreign and indigenous make.

Sales Agencies.

The display and sale of indigenous products, unknown in the home markets, may, to begin with, be entrusted to co-operative stores on a system of commission sales or ninety days' credit, when an article is likely to take the market. This arrangement will fit in with the principles of co-operation, and provide patriotic and profitable work for the stores, which may have inter-provincial connections with similar stores in the country, and thus mutually perform the functions of trade representatives. Similar connections may be established with co-operative stores in foreign countries, and occasionally trade representatives may be sent abroad when a need for that action is felt. Indigenous products must in the first instance try to meet the requirements of the home markets before manufacturers take in hand the supply of foreign ones.

Travelling exhibitions.

Travelling exhibitions is a very good idea, and if carefully developed will prove exceedingly useful. If a travelling exhibition is fitted up in railway carriages of the broad-gauge dimensions, and moved from centre to centre into buildings constructed on railway-sidings, and halting therein for fixed periods for inspection of visitors, it will prove economical in the up-keep and be shifted from place to place in a fixed rotation or be taken to places of industrial fairs, as the authorities in charge may direct. The control of the travelling exhibition on wheels should be left in the hands of the Imperial Board of Commerce and Industry.

Government patronage.

I have already said how Government can patronise co-operative societies. This patronage may also be extended to factories in the purchase of articles, which Government imports at present from abroad. Rules and regulations are made to be ignored and set aside ; the main change should be in its policy towards indigenous manufactures.

Lists of Government requirements should be published three months ahead, and circulated to manufacturers and published in important papers or Government Trade Journals.

Training of labour and supervision.

Need for education.

Primary and technical education produces far-reaching effects on industrial development ; an American Economist says :—" The mere ability to read and write opens at once the whole new world. He who possesses it can learn from the experience of all mankind, no longer from that of his parents and masters only. The extension of such a great improvement as the system of inter-changeable parts has depended largely on widespread of elementary education. A complex tool or machine—a plow, a reaper, a bicycle is made now-a-days on standardized patterns, each part being a precise duplicate of every other part made from the same pattern. When there is a break, the needed part can be replaced at once. The system makes possible the wide use of intricate apparatus in localities distant from repair shops. But its adoption is possible, in turn, only if those who are to use the apparatus have some general intelligence and if they can read instructions." . . . . . " Under the conditions of the modern world, and especially with the more methodical application of natural science to arts, the laboratory is likely to play a larger and larger part, both directly, through the inventions that come *full*-fledged from laboratory, and indirectly, through the work of those who have had its training. . . . ."

. . . . . " The engineer gets his fundamental training, not in the workshop or in the field, but in the technological school.....The same movement is seen in the extension of industrial training to the familiar mechanic arts. Apprenticeship to a craftman was for centuries the mode in which these arts were maintained and transmitted. But the conditions of modern industry have made apprenticeship ineffective and virtually obsolete. The ' master ' of former times has well-nigh disappeared ; he is replaced by the large employer, out of touch with his individual workmen, whether young or old. Those preliminary stages of industrial training which were in former times provided by apprenticeship should now be undertaken by systematic trade schools, and should be a part of the general system of public education. The time is not distant when the normal entrance to a trade will be through such schools."

. . . . . " Though reading and writing do not make a ditch digger stronger, and geometry and literature do not add directly to the skill of the mechanic, all education makes for intelligence, discrimination, the utilization of opportunities, the spread of improvements. It makes for sobriety, honesty, and steady endeavour. The more it is directed to uplifting the character and training the faculties, and the less it follows the dull routine, the more does it achieve the ends. Where it fails to achieve them, the remedy, even in the interest of bare industrial efficiency, is not to curtail it, but to improve it. . . . . Freedom of opportunity and diffusion of education are the means for discovering those possessing unusual gifts."

I have already mentioned, under " Trade guilds," the course that apprenticeship should take. Non-hereditary boys from 12 to 14 years of age, who have previously received

elementary education and preliminary training in an industrial school, may be sent by the Board of Industry to aided or self-owned factories for further training as skilled workmen. For work managers, foremen, or supervisors, higher education in commerce and applied sciences is essential, as without it they are ill-fitted to undertake the conduct of business or the direction and control of complicated processes of technical industries like glass-making, paper, soap, oil, varnishes, tanning, dyeing, pottery, enamelling, and alkali, etc. Youngmen of education aspiring to occupy posts of responsibility should also go through a course of final training in Government or private factories.

Mechanical engineers.

Local Governments, in the interests of uniformity and factory-owner's convenience, should recognise each other's certificates granted to mechanical engineers and drivers. In the matter of grant of certificates, competency rather than service should be the general guiding principle.

Official organisation.

Provincial Department of Industry.

A Government Department works, I presume, to a declared policy and prescribed rules and regulations. All these may be in existence, but the public knows very little about them, and forms its opinion from the results produced by the said department. These results are very poor. The reason is not very far to seek. The department is still in its infancy, and is poorly staffed. The head can work effectively only when other organs of the body are proportionately in an equally efficient condition. This department has much to learn and must learn that much efficiently before it can be in a position to teach others. It requires considerable improvements in men and methods. I shall speak of methods first, which, if agreed upon, will call for men themselves.

A man with some capital is willing to invest it in an old or new industry ; the industry may be new in India but old elsewhere. He naturally applies to the Department of Industry for necessary information. I shall presume for the sake of an illustration that he is interested in glass making. The Department of Industry should be able to furnish him with information on the following heads :—

(*a*) Sources of raw materials in India, and of chemicals of foreign and local manufactures.

(*b*) Building materials, such as fire-clay, fire-bricks.

(*c*) Up-to-date plans of approved furnaces, pots, automatic blowing machines, manual blowing tools, and grinding machinery, with their approximate costs at a certain place of delivery and their sources of supply.

(*d*) Country and foreign skilled labour, their ordinary places of residence, their wages by the month or per batch, their conditions of labour and outturn of a day's work.

(*e*) Necessary factory buildings.

(*f*) Description of various processes and experience of other factories.

(*g*) Separate manufacturing costs of chimneys, phials, bottles, etc., and the estimated earnings of undertaking or management.

When a capitalist applicant gets the aforesaid information, he shall be able to decide for himself, and shall stand a better chance to succeed than if he were to start without it.

The collection of this kind of information, its digestion, and casting it in the form of a business prospectus calls for the engagement of a special class of men in the service of the department, and they should be engaged if it is really to be of service to the country.

A Department of Industry should have the following sections, each under a special man with adequate establishment :—

(1) Hardware and Machinery, (2) Electricity and Electrical Goods, (3) Drugs and Chemicals, (4) Woodware, Toys, etc., (5) Textiles, (6) Pottery and Glass, (7) Tanning and Manufacture of Leather Goods, (8) Stationery, (9) Cottage Industries on smaller scale, (10) Fancy Goods, Jewellery, etc., (11) Statistics and Commercial Intelligence, (12) Trade Journal, (13) Library, (14) Shipping and Railway Transport, (15) Money Market.

A Director should be a business man, whether official or non-official, on a monthly salary of Rs. 2,000 to 3,000 appointed on probation for two years, ultimately serving at least for 5 years if confirmed by a Local Government. He should be assisted by a Board of six or more members, each appointed or re-appointed for a term of one year. This time-

limit will facilitate the appointment of new members to serve new interests or prove an incentive to old ones to justify their claim to re-appointment by good results during their prior incumbency. Four of these members may be experts from Government or private institutions, and the remaining two should be purely men of business, carrying on for the time being important industries in a province. Out of the four experts, one may be an Analytical Chemist, another a Professor of Applied Chemistry, the third an Engineer, the fourth the Director of Public Instruction. These expert members should get an honorarium for attending meetings of the Board.

This Board should have power to direct the expenditure of budgetted funds. The Director must be the chief executive officer, who will carry out the decisions of the Board, if such decisions, where Government sanction is necessary, have been confirmed by the latter. A Director, whether official or non-official, should, during the time he works as such, be considered as an officer subordinate to a Local Government.

The Department of Industry, which should be called a Board of Industry, guided by the Department of Education, where purely literary instruction is concerned, should have undivided control over industrial schools so long as the system of public education is not assimilated with the present and future industrial needs of the country. Even then industrial schools will demand a special treatment different from that of a purely literary education.

Elementary industrial education should be imparted through the medium of vernaculars, introducing foreign technical terms where vernacular substitutes do not exist.

Monographs on industries are very good, but being in English they do not reach a class of people who might derive greater benefits. I should like them to be translated in the vernaculars.

An Imperial Department.

Provincial Boards of Industry, subject to the general control of Local Governments, should be in harmony with the general policy of the Imperial Board of Commerce and Industry, which may remain in charge of a Member as at present, but which may be assisted by a Board of experts and men of business. The Board may include :—

Experts :—

(1) Heads of Imperial Reserach Institutes, engaged in industrial researches, including in addition Agricultural Chemist.

(2) Chief Inspector of Mines in India.

(3) Reporter of Economic Products.

(4) Inspector-General of Forests, or his representative.

(5) Director of Geological Survey, or his representative.

(6) Financial Expert.

(7) Secretary to the Government of India, Department of Education.

(8) Electrical Adviser to the Government of India.

(9) A Civil Engineer, and

(10) Men of business. These may be appointed from amongst the most important captains of industries, giving a chance to every province of having at least one member on the Board.

Functions of Imperial Board.

The Imperial Board of Commerce and Industry may hold quarterly meetings at Delhi to transact such business as may come before it on Government initiation, or as a proposal submitted by a Provincial Board of Industry for sanction, or as proposed by a member of the Imperial Board. Proceedings of the Imperial Board may be subject to the sanction of the Governor-General in Council only when a question of imperial character of far-reaching effect is at issue, such as the amendment of Indian Tariff, the amendment of any other law in force, commercial relations between Indian States and British territories, or commercial adjustments between India and Independent States on India's frontiers. With respect to budgetted funds the Board should have absolute powers to devote them to objects for which they might have been provided.

The Imperial Board should concern itself with (1) investigation of new industries suitable for introduction into India, (2) the improvement of existent industries on modern lines, (3) devising means of protecting and nourishing old and new industries, (4) initiating such research work in India as may conduce to achieve the foregoing objects and aims, (5) propagating accomplished researches through colleges, industrial schools, and publishing

them in trade journals, and (6) assisting the flow of funds, both Government and private, into industrial channels. When success in these objects shall have been gained, and when the supply of manufactured products will exceed the country's demand, the Board shall have to send out trade representatives abroad to discover outlets for India's surplus. Any action before this happy consummation arrives will be an unwarranted waste of public money. Experts engaged in research work may be allowed, when need be, to visit research institutes abroad to verify their own results or pick up better methods or bring back new discoveries.

The Imperial Board should lead the way in establishing technical laboratories, under a well-paid and competent staff, to so handle mineral, agricultural, and forest products as to make it possible to start industries on investigated lines. The Board may start them itself, if need be, but on lines that may eventually lead to their absorption by private enterprise in the form of companies or associations. Imperial experts, when applied for, may be loaned to Provincial Boards to assist them in organising their laboratories or helping a new industry to come into existence. These Imperial Experts may be treated, with a view to their status, as *Advisory Members* of the Provincial Boards, subject to such rules as the Boards might have for their guidance. They may further be required to act under the orders of a Local Government and its Director of the Board during the period of deputation.

Co-ordination of work of Imperial and Provincial Departments.

It is very difficult to draw a line of demarcation between subjects deserving Imperial or Provincial consideration. Absolutely new industries affecting the whole of India may be taken in hand by the Imperial Board, and those of local concern by the Provincial Board. Similar conditions may apply to old industries. Even this division of labour may be open to several objections. The best way, in my opinion, to get out of this difficulty will be to let the Imperial and Local Boards by mutual arrangement to have the work done by the most capable men, whether attached to Imperial or Provincial laboratories. Upon these bases technical laboratories may work independently of sister institutions elsewhere in the country. When research programmes of the Imperial and several Local Governments are settled and announced to one another, the danger of " overlapping and waste of energy " will hardly be encountered. Two men at different places may be engaged in one line of investigation ; one may fail, but the other may succeed. Such instances are not uncommon in the scientific world. One man's waste of time and energy is insignificant in comparison to another man's simultaneous success ; the country at large is the gainer at a little extra loss, and can well afford to bear it.

Reference libraries.

Scientific works of reference are non-accessible at present. There must be a liberal supply of such works in the libraries of Boards of Industry, and they may be circulated to established factories for a fixed period or inspected by visitors free of charge.

College of Commerce.

Each province may have a College of Commerce, imparting instruction by short courses to men already engaged in manufactures or commerce, and providing complete instruction by a three years' course to matriculates or graduates of any university. People taking short courses should get Professors' certificates of study, but those going through a regular course and after passing the final test, should receive a diploma from the provincial University. The syllabus may consist of principles of Economics, Mercantile Law and Practice, Commercial Geography, Banking Theory and Practice, Organisation of Commerce and Industry, Accountancy and Auditing, and English. An industry has a double aspect—manufacturing and commercial—alumni of commercial colleges will prove better associates of industrial experts than illiterate men of business.

An easily intelligible text book in vernacular on the subjects mentioned in the last paragraph, except English, may with advantage be introduced in the secondary schools, so that students may not be totally unfamiliar with the subjects of college courses, should they ever take up higher education.

Local bodies

Night classes for workmen to improve their elementary knowledge of reading and writing so that they may be able to understand the advanced courses dealing with their several crafts, will fulfil the needs of the country, and these classes may be opened and maintained in each town by the Municipal and District Boards. The courses of instruction should be advanced study of vernaculars, elementary English, and lectures on technical subjects dealing with local industries.

Commercial Intelligence.

One single office of Commercial Intelligence at Calcutta for the whole of India is insufficient. Many duplicates are required. Commercial information must be made easily accessible in each province at the Board of Industry. Information of a general character should periodically find a mention in each provincial trade journal.

Government should lead the way in starting trade journals. A journal devoted to each industry will be a poor show for want of copy under the present conditions. Each industry must grow and multiply before it can have the privilege of an exclusive journal. The general requirements of the country will be met, if trade journals are published in sections headed Minerals, Agriculture, Forest Products, Commercial Intelligence, Co-operative Movements, Exhibitions, Industrial Fairs, Money Market, Researches, Brief Reviews of Technical Publications, Foreign and Indian Industrial Legislation and Advertisements. These journals should be bi-lingual, English matter appearing side by side with Vernacular translations. This arrangement will popularise them and achieve their objects of publication. The journal may be subscribed for entirely or in sections. The rate of subscription should be as low as possible ; it should never exceed the cost price, rather it may be under that even. **Trade journals.**

There must be a very strong back-ground of commercial morality before the institution of certificates of quality can be expected to serve any useful purpose. When foreign exporters are prepared to stipulate for a certain percentage of foreign matters in grain, and themselves encourage the presence of moisture in ginned cotton, there is no matter for surprise if sellers should usually take to these measures as a matter of unobjectionable routine. The remedy lies with the buyers insisting on a better and purer quality. With a change in the methods of exporters, an improvement in the quality of exports will follow as a natural sequence. With regard to articles of food consumed in India, they are generally sold and bought in a loose and unpacked condition. A firm may hold a certificate of quality with respect to a certain analysed article, and yet pass on one of inferior quality that may be inherent in the article itself or it might have been brought on by the adverse influence of decomposing climate. These conditions call for an ever-vigilant machinery of inspection on behalf of the certifying authorities. But where articles of an imperishable nature or those capable of withstanding for a reasonable time climatic ravages are concerned, a certificate of quality reproduced in facsimile may very properly be attached to them. But even this latter class of goods must be subject to periodical inspection. **Certificates of quality.**

There is a widespread adulteration of ghee, oils of all kinds, atta, sugar, and milk. These articles are the staple foods of labour and capitalist classes ; they cut at the very root of productive energy on account of the poor nourishment that they give to the consumers. A general deterrent legislation on this subject is of primary importance, and, when passed, should be worked through the agency of Health Officers and Special Inspectors. **Adulteration.**

Adulteration in chemicals, etc., also obtains to a certain extent, but they escape detection in the absence of analytical chemists. Manufacturers discover them through the poor or ruinous results they produce. Glass industry suffers a great deal on this account ; there may be other sufferers as well.

A large number of railways in India are owned by Companies ; they invested capital to earn profits. It is too much to expect them, individually or collectively, to cut short their profits by allowing reduction of rates in favour of any industry, in the profits of which they do not participate. With a view to allow the products of a new industry to reach distant markets in the country, where at present non-British goods are holding them, " the Government should give the railways subsidies for carrying " indigenous manufactures from their place of manufacture to specified places " either free of charge or at reduced rates, as is done in some countries." " Some articles, such as Belgian salt-cellars, are actually brought free of charge as ballast. This means that the imported article is subsidised as compared with the Indian article that has to pay freight from inland centres to the sea-ports." **Transport facilities.**

I have to offer similar remarks with regard to Shipping Freights from Indian ports to China, Straits Settlements and Persia, etc., so far as cotton fabrics, yarn, and wheat flour from Bombay and other ports are concerned. **Shipping freights.**

Some years ago a scheme to produce hydro-electric power from the Jumna near Jagadhri for industrial application was put forth in the time of Sir Louis Dane, but it seems to have been dropped for reasons unknown to the public. The promoters of this scheme had proposed to supply electric power to factories between Lahore and Delhi. The question may be re-opened by a general survey of the river systems of the Punjab. An enormous amount of energy daily runs to waste in the land of five rivers. **Hydro-electric power.**

Jail industries have not so far injuriously affected any private enterprise ; on the other hand jail initiation in carpet weaving has fostered the latter. In fact jails are rendering exceedingly patriotic service by training the convict labour to useful handicrafts, and that labour on release, with a few exceptions, is absorbed into distant factories and smaller industrial establishments. I might say convicts in jails may with greater advantage be employed on such handicrafts as are at present in sore need of skilled labour. For **Jail competition.**

this purpose jails may engage outside instructors to impart requisite training to long-term prisoners in glassmaking, glazed pottery and bricks, conservancy gamlas, and enamelling. These industries come within the definition of hard labour, and will replace handgrinding of corn and other drudgeries of an unelevating type.

General remarks.

In my preceding statement I have tried to impress upon you that glassmaking in this country has a fair prospect before it, provided the proposed provincial Boards of Industry so equip themselves as to (1) furnish a prospective glass manufacturer with all the reliable information he vainly expects to get from existent factory owners, (2) make it possible for him to obtain a necessary number of skilled workmen trained at a Government demonstration or aided factory, (3) make it easy for him to receive financial assistance from the proposed industrial bank, and (4) assure him by State action that his investment will not be jeopardized by any apprehended foreign competition after the present war. The realisation of these propositions will place, not only glassmaking, but any other industry as well, on sure footing of healthy development.

The manufacture of soda, woodpulp, coal-tar dyes, and smelting and refining of mineral ores into ready chemicals, await development on the ground of raw materials needed for them being available in the country.

Research work.

I have already made a passing reference to research work. This deserves better consideration. I think it will be generally admitted that during the last 25 years a major portion of the discoveries of industrial importance has come either from the universities or from men whose knowledge was obtained therein. This statement applies to other countries than India. India has got to copy their methods, and learn their experience before she can act on independent lines. I have said that laboratories may be started and worked by Boards of Industry. This should be only a temporary arrangement; eventually all laboratories should be attached to universities and colleges. Because " it is from large universities of the world that industry has received in recent years its most valuable gifts. The beneficence of the University extends not only to the solution of an industrial problem, but also to the furnishing of men.....Now, the purlieus of adolescent " good men " are the laboratories of the University. There it is that men are " tried out," and there it is too that men are known better than they know themselves .....Wherever there is the smoke of a factory chimney, there are unsolved, exasperating, vitally important manufacturing problem—problems in glass, porcelain, starch, tanning, paints, drugs, iron, oil, metallurgical products—problems wherever man deals with substance. It seems clear that these problems can best be answered by combining the practical knowledge and the large facilities of the factory with the new and special knowledge of the universities, and by making *this combination* through young men who will find therein success and opportunity. It lies in giving the manufacturer (or his patron, the Government in India) the privilege of founding in the University a temporary industrial fellowship for the investigation of a specific problem, the solution of which would mutually and materially benefit both the manufacturer himself and the public. When, therefore, the University accepts from a manufacturer the foundation of an industrial fellowship, it not only provides an expert intense attempt to solve a problem by the application of the newest of new knowledge, but, as well, it provides for that industry a "good man " whom the industry would do well to cherish....." The successful solution of an industrial problem should carry with it the payment of one-tenth of the net proceeds arising from the discovery of the Fellow, the latter being regarded as the inventor.

There should further be co-ordination and co-operation between universities, industries, and banks. " Apposite to this statement, and indeed typical, is the case of a German University professor who discovered a new process. His first step was to present it to the experts of one of the great factories concerned; his second was to present it to the Deutsche Bank, which employed its own experts to report on the validity and practicability of the process. As a result, the professor with his discovery, the Deutsche Bank with its funds, and the company with its immense facilities for investigating the discovery on a large scale, formed a little *company of three* for the exploitation of the process ."

If the labours of the Indian Industrial Commission result in securing to the present and the future generations of manufacturers all the facilities that make for raising a land full of raw materials to the proud 'position of a manufacturing country,' the universal gratitude of the Indian people shall be the most sincere offering to the members of the Commission. May God and the Good Cause of India guide the Commissioners in their wisdom and fellow-feeling to make such recommendations as may fulfil the intensely-cherished hopes of Industrial India! And may people's Blessings descend on your august heads for your noble mission!

ORAL EVIDENCE, 10TH DECEMBER 1917.

(To the *Hon'ble Mr. H. J. Maynard.*)—A short time ago an offer was made by the Excise Department to the witness to enter into an engagement with him by which the Excise Department would undertake that certain license-holders should be required to purchase a certain proportion of their bottles from an Indian firm on the understanding that the Indian firm would fix a certain maximum price for a certain standard of quality of the bottle. There was to be no undertaking as regards monopoly to the witness. The only undertaking was that the supply should be from the Indian firm. He was asked to quote a figure at which he would be prepared to supply bottles of that standard quality. Owing to the existing conditions of war the present rate at which he could quote a price would be so enormously high that he did not think it possible to make a quotation. He said that he was sufficiently occupied in making little chimneys for the railway and other departments, and was on that account not able to undertake additional work as he was not able to find an additional supply of glass-blowers for the purpose. The witness also said that he was now making lamp chimneys for the railway and other departments, but it was only after the beginning of the war that he was able to do so. Before the war the Government Departments purchased imported articles. He was not able formerly to supply because the articles were imported and the officers of the Departments concerned were not willing to take his products. He obtained a letter from the Director of Industries as an introduction to the Stores Department of the Railway, and owing to this letter and the need in which the Railway Department found itself of obtaining glassware in India he was enabled to secure work from them. Mr. Maynard was misinformed in supposing that the Storekeeper of the North-Western Railway pointed out faults in the manufacture which were subsequently corrected, but what happened was that the draftsmen made mistakes in the specifications and measurements and those mistakes had to be corrected, or something of that sort. The witness also complained of adulteration in the chemicals of which he makes use in his glass works, for instance, in lime and other chemicals which he is using in his works and the bad reputation which this adulteration brings about in respect of his commodity affects his trade. He desired a law for preventing adulteration in the interests of industry.

Mr. C. E. Low.—*Q.*—What made you take up the glass industry to start with?—*A.*—A company was started in Ambala in 1894 or 1895 for the manufacture of glass as I saw that all glasses came from foreign countries. The company was not successful owing to absence of expert advice and also to the fact that they could not raise sufficient capital.

Q.—Was there any information or any enquiry made as to whether the raw material available at Ambala was suitable for glass-making?—*A.*—No such enquiry was made, but sand and lime, the only raw materials obtainable in this country, came from quarries in Dehra Dun. Colouring materials, though existent in the country, such as manganese and cobalt ores are not refined in India.

Q.—At present what kind of glass are you making?—*A.*—Chimneys and globes.

Q.—Is there a large percentage of breakages? —*A.*—The majority do not break now, but a certain number do and apparently will always break.

Q.—Do the Japanese blowers teach you how to blow chimneys?—*A.*—We knew how to blow chimneys before, but these Japanese do teach. We do not engage them entirely on a system of piece-work, but we have got a system by which they have a share in the profits.

Q.—Do you boil glass in crucibles?—*A.*—Yes, we melt glass in crucibles; tank system has not been tried.

Q.—Where do you get crucibles from?—*A.*—We get them from Japan, but before we manufactured locally.

Q.—You do not make local crucibles successfully?—*A.*—No covered pots are imported from Japan, but open pots were and are a local success.

Q. Do many break?—*A.*—Yes, but our local make lasted longer.

Q.—Have you had any correspondence with the Bombay School of Art about making crucibles?—*A.*—I do not think so.

Q.—We saw specimens made in the Bombay School of Art of pots for glass work and crucibles?—*A.*—No we only had correspondence with the Jubbulpore people. Before the last two years we were manufacturing our own, some with the German fireclay, and some with the Jubbulpore fireclay, and it has been successful. The Japanese covered crucible is good enough and suitable for our purpose.

Q.—I do not know whether you are aware that the Bombay School of Art had been investigating all the different kinds of clays which they could find in order to see what sort of clay was suitable for making, among other things, these glass-melting pots?—*A.*—I do not know anything about the Bombay School of Art.

Q.—You have not thought of trying to get into communication with them?—*A.*—I will try.

Q.—Do you consider that you will be able to go on getting a large profit when the war is over?—*A.*—For some years I think we can go on, but after that I cannot say anything at present.

Q.—For some years you will be able to go on because the freights will be high?—*A.*—Freight, and after that I think we require a little help in that respect from the Government. I applied last year and the year before last to the Government of India through the Local Government to give us a contract for ten years at least on the old rates for foreign goods, but we got an answer in the negative.

Q.—Old rate, that is, the rate before the war?—*A.*—Before the war—five years' rate. In the Telegraph Department and several other departments Government require lots of these glass goods for cells and other things.

Q.—Have you succeeded in making battery cells?—*A.*—I supplied a few months ago, some to the Telegraph Department and some to other departments. There is one scientific workshop in Ambala which is supplying throughout India to the schools, and that workshop is buying some of its articles from us.

Q.—Do you think that Government could give you a sufficiently large order when the war is over to give substantial assistance to you?—*A.*—Yes.

Q.—Government is a big consumer?—*A.*—Yes. Not only that, but there is the reputation that the Government is giving orders to us. Now we are not putting our mark on the chimneys. Previously when we supplied several chimneys to the markets of Lahore and other places with our marks on, the people used to say, these are country-made and we do not want them. Now I have removed the mark and am introducing my goods without a mark, and there is no complaint now.

Q.—I think that you have established your reputation and you can use your own mark?—*A.*—Yes. We require Government patronage in that respect. People will know that we are supplying Government, and therefore our goods must be good.

Q.—Would not some difficulty arise if other glass concerns were started in India now or after the war?—*A.*—In my opinion there is much demand and one or two factories cannot meet the requirements of India, but their success or failure depends upon Government policy after the war.

Q.—I was thinking about the available Government orders. Will there be enough Government orders to assist more than one factory?—*A.*—There are many lines in this glassware business. In the Punjab there may be one line, in the United Provinces another, and so on. One factory would make only pane glass, another chimneys, a third, bottles, the fourth, table wares and so on. In that way there would be no competition, and there would be many openings.

Q.—Ambala is close to the boundary of the United Provinces?—*A.*—Yes.

Q.—Was there not a talk a short time ago of some one opening a factory in the United Provinces in some district quite close to Ambala?—*A.*—No. Some of my own men or friends have opened a factory in the Muradabad District with the help of Mr. Silver.

Q.—Perhaps you mean Mr. Elland, the Government Glass Expert?—*A.*—No. Those people had trouble only about finance. Mr. Silver was very keen on the development of this industry, and he promised capital at a low rate of interest. Government also offered me help in that respect which we have not availed ourselves of. It is not at present a question of competition or anything of that kind.

Q.—Why I was asking you about this is this, if Government gives order to two different factories close to each other that will stimulate competition which is not desirable at the present stage although afterwards it may be very good?—*A.*—Quite so.

Q.—You are now largely occupied with Government orders?—*A.*—Yes.

Q.—Almost entirely?—*A.*—Yes.

Q.—Are you getting apprentices?—*A.*—According to our own system which is this—The boys who come to our work become after a year or two expert blowers, and in that way we are improving.

Q.—How many men do you employ in your factory?—*A.*—One hundred men altogether.

Q.—Are the boys taught?—*A.*—We are ready to teach, but in the ordinary course all these workmen are getting work with the help of these boys and they are learning themselves for their own sake. We have not got any special arrangement now. A few years ago

in the time of Sir Louis Dane, the Lieutenant-Governor of the Punjab, we adopted the system, but after a few days it was discontinued. Again the present Lieutenant-Governor kindly tired to help us, but the Government of India replied that it was against the policy of the Government to help industry—this glass industry—and that it would interfere with foreign goods or something like that.

Q.—It was not anything like that, because the reply went under my signature ?—*A.*—I do not think so, but Mr. Townsend may remember the exact wording.

Q.—Recently or in 1905 ?—*A.*—Only about 1½ years ago or two years ago. In your time.

Q.—I am perfectly certain that it was not as you say. We offered to lend some money?—*A* —I did not ask for a loan, but I asked for some irrecoverable grant, and I think the Local Government recommended Rs. 5,000 or something like that or a yearly subsidy for apprentices, and we got a reply after a few months that the Government of India said that they did not think it proper to adopt that policy

Hon'ble Sir R. N. Mookerjee.—*Q.*—After how many months ?—*A.*—There had been correspondence for fifteen years. After we got this reply that the Government was not ready to help, we had to give up the thing.

Mr. C. E. Low.—*Q.*—You have not been corresponding for fifteen years on this subject ?—*A.*—On this subject. Not with the Government of India. In the time of Sir Louis Dane we started correspondence about ten years ago, when in the beginning Sir Louis Dane came on a visit to our factory, and I requested then some things, and from that time the correspondence begins.

Q. Financial assistance was sanctioned under certain conditions which were not fulfilled, and so it did not come off. Then there was a recent application made in 1915 or 1916 and the Government of India offered a loan, and I gather that you did not take it ?—*A.*—The loan had to be repaid. Suppose we lost that money in the course of business it would be difficult for us to return the loan. Four per cent. or something like that the Government offered. No doubt, it was a low rate of interest, but it was difficult to make any promise that we would repay on such and such a date. Rs. 20,000 or Rs. 40,000 we could easily put in our business ourselves, and for the sake of a few rupees saving in interest we thought it was not worth while to have the interference of Government.

Hon'ble Sir R. N. Mookerjee.—In your experience in dealing with the Government on business matters, generally speaking, how long does it take to get a reply from the Government ?—That depends on the departments.

Q.—Take the Department of Commerce and Industry ?—*A.*—I cannot write direct.

Q.—Through your Government ?—*A.*—It depends on the circumstances and the subject.

Q.—Can you give us a rough idea as to what is the usual time taken for a reply ?—*A.*—In these two or three matters I have applied, and I think I got a reply on the finance question after a long time—three or six months.

Mr. C. E. Low.—*Q.*—Whom do you apply to in the first instance ? The Director of Industries ?—*A.*—I think I moved the Head of the Local Government, who asked the Director to make enquiries and report. The two Directors, one after the other, commended my applications to the Government.

Sir F. H. Stewart.—*Q.*—You are fully occupied with Government orders ?—*A.*—In these days, for globes, chimnes, kerosene lights, special globes and some special orders for the Research Institute at Kasauli.

Q.—Are you making phials and bottles ?—*A.*—We have given up that line altogether.

Q.—You think that if Government is to give money aid it should make it a condition that it is given to a person of substance who is willing to put in a good amount of his own money ?—*A.*—It is not necessary that a person who applies for assistance to Government should be a person of substance, but it is necessary that the Government should obtain guarantees that the money will be spent in the industrial enterprise for which it is borrowed.

Q.—You say that "the Government should undertake not to publish the results of the conduct of business until the purchasers by prior agreement have been in possession for a term not less than five years."—*A.*—Suppose I have got a glass factory and I take some help from Government, the Government will have full liberty to see my accounts and get all the information, but I would not allow Government to give this information to my rivals or competitors.

Q.—That would be your own business ?—*A.*—Yes. If I start a new industry and the Government helps me on condition that I give them all the information, what I want is that for the first five years Government should not disclose that information.

Q.—You want a monopoly for the first five years?—A.—Only for that factory. I am not saying that Government should not give money or any other help to other glass-makers. It can give it, but it should not disclose the information we give to others. Suppose we put five per cent. soda, two per cent. of something else and so on, Government should not disclose that kind of information.

Hon'ble Sir Fazulbhoy Currimbhoy.—Q.—You have described the railway difficulties. Can you mention any specific cases of hardship? What kind of difficulty have you in mind? A.—About freight.

Q.—What is the freight from Ambala to Jubbulpore?—A.—The exact figures I do not remember at present. In 1908 I think I made a statement for the Industrial Conference in the Punjab.

Q.—I would like to know the present rates from Ambala to Jubbulpore and from Calcutta to Jubbulpore?—A.—About the glass industry what I have in my mind is this. Supposing I have to send stuff from Ambala to Multan I have got to pay a little more money than for the same things from Karachi to Delhi or from Karachi to Ambala.

Q.—The distance is short and you have got to pay more?—A.—Yes. I think I have requested our Director to give us some help in that respect, and I do not remember what the railway answered.

Q.—How many years' experience have you of this glass work?—A.—Fourteen years entirely, and before that something also.

Q.—You will be able to inform the Commission correctly on one subject, and that is this—if there is no war and if the rates go down as usual, do you think that if you start a glass factory in the country without Government help it can compete with the foreign made article?—A.—No, it is absolutely necessary that our Government should protect from now onwards new or old unsteady industries by letting them have reduced inland freights brought about by the grant of subsidies to railways and by raising barriers at Indian ports.

Q.—Do you mean import duty?—A.—Yes, I am in favour of import duty. It is very difficult to ask the railway to reduce their profits, because they are here to earn and not to lose.

Q.—Do you want the railways to be Government railways?—A.—Yes, Government ownership will eventually yield to public control of rates in the interests of indigenous industries.

Q.—Without Government help you cannot start a glass factory in the country?—A—No, if started, bounty-fed foreign factories will crush it by entering through our practically open door.

Q.—It is impossible?—A.—Yes.

Q. If you put in a large capital, and bring the best experts from all over the world to work the factory on a large scale with a capital of 15 or 20 lakhs, still do you think, without Government help, it will be able to compete with foreign goods?—A.—We cannot do without Government help. A large amount of capital and foreign experts may prolong the struggle but will not save the industry from eventual collapse, if Government does not step in to raise up protective fencings.

Hon'ble Mr. H. J. Maynard.—Q.—What dividend are you paying?—A.—There is no dividend paid because it is a private concern belonging to myself Before the war we lost some money, but now there is a certain amount of profit.

Witness No. 373.

Mr. Ganda Singh Uberoi, *Messrs. Uberoi, Limited, Sialkot.*

Written Evidence.

Training of labour and supervision.

I am interested in the athletic trade only.

My business is affected by matters relating to the following questions:—

Q. 44 (*a*)—Certainly. I find that the boys who have been to school pick up mechanical knowledge much quicker than those who have not been educated.

Q. 44 (*b*)—I had to import English experts in various departments to teach my men and to help them to become more efficient and this experiment proved effectual and successful.

Q. 45 (*a*) *&* (*b*)—The first thing necessary is to give them education. Then teach them improved methods through up-to-date practical experts.

Q. 46—I have trained some hundreds of boys for the athletic trade but not as bound apprentices. I find that Indian boys are generally very quick to learn any industry provided they are taught on correct lines.

Q. 47—I have had no experience of boys taken from industrial schools, but I certainly believe that early training at these schools should very greatly help the boys to get first insight and should influence their minds to decide what business they would rather follow and this I consider is a very important factor in their future success.

Q. 48—I think boys should first be sent to industrial schools to ascertain what business they are most fitted for. They should then be apprenticed to a business in which they have shown aptitude and for which they have a liking and more especially as they can get expert training.

Q 49—Young men who are learning or have learnt their business should be given every facility for attending night or short-time day schools, more especially those who feel that this education will help them to get more efficient.

Q. 50—I think industrial and technical schools should be placed under the Department of Industries. This Department should be assisted by the Department of Education in providing teachers on the Arts side and examining the boys on the said side. But the management must remain in the hands of the Industrial Department.

Q. 51—For the training and improvement of Supervisors and skilled Managers they should be sent to Europe or those countries where their particular business is a speciality or experts from those countries might be imported for this purpose.

Q. 52—Government should make grants to the firms who send men to become efficient to foreign countries. These grants may be in the shape of free passage, or so much a year for the time they are learning or a percentage of the whole expenses.

Q. 53—It is difficult to lay down hard-and-fast lines on which Government can require assisted industries to train technical experts. This can be regulated by an arrangement made at the time the assistance is given and based on the amount of assistance given.

Q. 54—My answer to this question is in the affirmative.

Q. 55—So long as our general knowledge of the elements of Mechanical Engineering is in its infancy, all Engineers in my opinion should be qualified and hold a certificate.

General official administration and organisation.

Q. 56—We have a Department of Industries in the Punjab, but I have never heard of this Department doing anything substantial to help the local industries.

Q. 57—We should have a Board of Industries which should be advisory only.

Q. 58—The Members of this Board should be recognised successful leaders of industries in the province, who should be capable of giving sound advice.

Q. 59—I do not recommend a Board with executive powers in the first instance.

Q. 60—Yes. He should be an executive officer of the Department and should be a thorough business man with a varied and wide experience of organisation and possessing large amount of general information.

Q. 61—The Board should deliberate and submit their recommendations as to what should be taken in hand by the Government. After the Government has accepted the recommendation, the Director will carry it out.

Q. 62—I do not advise one province having anything to do with others nor should I suggest having an Imperial Department which I consider will more impede the progress of some provinces than help them.

Q. 62 (*a*)—Yes.

Q. 62 (*c*)—Weaving, hosiery and such like.

ORAL EVIDENCE, 11TH DECEMBER 1917.

Hon'ble Sir R. N. Mookerjee.—*Q.*—In answer to question 48, you say: "I think boys should first be sent to industrial schools to ascertain what business they are most fitted for." Don't you think it should be the other way about, that they should be put to practical training to find out their aptitude and fitness for the line they select?—*A.*—First of all their minds must be trained, and that you can only do in the schools while they are very young.

Q.—Irrespective of their aptitude or physical fitness to do the work?—*A.*—That you can determine afterwards, when the boys are sent to an industrial school. It is there you can find whether there is any aptitude or not.

Q.—How?—*A.*—Because they will show a liking for various things; one may be fond of carpentry, another of iron work, and so on. When they show a certain aptitude, then it should be determined whether they should be sent to any workshop or not.

Q.—And there they may not prove useful or may be physically unfit?—*A.*—Boys are very young. How can you say whether they are physically fit? You can only say when they are a little bit grown up.

Q.—What do you mean by your answer to question 55: "So long as our general knowledge of the elements of mechanical engineering is in its infancy, all engineers in my opinion should be qualified and hold a certificate." Do you mean afterwards they should not qualify?—*A.*—In England everyone can work as a mechanical engineer, but here in India I suggest no man should be allowed to handle a steam engine without possessing some sort of certificate of efficiency.

Q.—You don't refer to boiler working?—*A.*—I do.

Q.—But then in Bengal and other provinces there is no examination, yet they do the work all right?—*A.*—I have only knowledge of this province.

Q.—They have no examination and no accident.—*A.*—We have had a lot of accidents in the Punjab.

Q.—Your experience is only in this province?—*A.*—Yes.

Q.—You are against having an Imperial Department of Industries?—*A.*—Yes, I am.

Q.—Don't you think an Imperial Department will be helpful to look after other provinces?—*A.*—That would be a very bulky affair and would impede progress. If there is a Board it will be required to do so much and no more. There are provinces where people are more active and more practical. They want to do more than people in other provinces who are indifferent. Then again there are certain provinces where the heads of Government take more interest, and where the Director of Industries may be a better man; so I suggest that all the provinces should be left alone to do their best in their own line.

Q.—What about getting technical advice? You cannot expect every province to have a staff of all sorts of technical experts?—*A.*—I certainly suggest that all provinces should have their own experts.

Q.—Even if you have no work for them?—*A.*—You cannot have about 8 or 10 experts covering industries all over India. You have to provide the various provinces with various kinds of experts for those industries which you want to take up in that province: for instance, you may have sugar in one province, or the paper industry; then you have to provide only two experts for that province.

Q.—And if there is any industry besides sugar and paper?—*A.*—I am only giving you an illustration. You have to provide only those experts in those provinces who can deal with those specific industries which it is the intention of Government to put in force. We should have a provincial laboratory in every centre of the province.

Q.—Well fitted up for all industries?—*A.*—Yes.

Mr. C. E. Low.—*Q.*—How many people do you employ?—*A.*—About 250 to 300.

Q.—Do these English experts you have imported teach your employees what they know themselves?—*A.*—We take the boys as apprentices and teach them at our own factory.

Q.—Are you able to get your men instructed by these English experts sufficiently to enable you to get rid of the imported experts?—*A.*—Yes, they teach every bit of the thing.

Q.—Are you still employing these men from outside?—*A.*—I think for some time it is necessary that these factories should be placed under the supervision of English or foreign experts.

Q.—You have not been able to do without them yet?—*A.*—Not yet.

Q.—How long have you had them?—*A.*—From 1905.

Q.—And you have still got them?—*A.*—I had to bring two first, and they could not complete the work. I had to go back to England and bring another set of experts.

Q.—But you have still got these English experts?—*A.*—Yes.

Q.—They are working as foremen, I suppose?—*A.*—You can call them foremen. Of course they do two things; they teach the boys and also examine the goods.

Q.—Are you getting any Indians to do the same work that these English people are doing, and accept the same responsibility?—*A.*—I have not as yet got such men. They have not attained that efficiency. The business is in its infancy.

Q.—Have you tried to train men of that sort?—*A.*—Yes, I am trying; I am getting men of that kind.

Q.—How long do you think it will take?—*A.*—It will take another 5 or 6 years.

Q.—What class of men are you getting in; are you getting any educated people in?—*A.*—A certain percentage.

Q.—At what age do you take educated people in?—*A.*—From 12 to 14 years generally.

Q.—Simply with primary school training?—*A.*—Yes.

Q.—You don't take any older?—*A.*—Those matriculated boys don't do.

Q.—Have you taken in any people from any of the technical schools?—*A.*—No.

Q.—Were any available, or did you think they would not be of any use to you?—*A.*—I did not know they were available.

Q.—Have you any idea of training any such?—*A.*—I shall be very pleased to have a few if I can get them.

Q.—Do you believe in the idea of apprenticeship?—*A.*—I do.

Q.—Do you find the difficulty that when you have trained your workmen they desert you for somebody else?—*A.*—That is the greatest trouble at present.

Q.—Do they go away before they have learned their business properly; or afterwards?—*A.*—In both cases.

Q.—Have you any definite suggestion to make to meet that difficulty?—*A.*—I think a special apprentice law should be passed on the same lines as in England. They have apprentices in England as their property. I don't know if we can deal with the boys as effectively in this country.

Q.—Have you ever considered the idea of an optional system of apprenticeship, under which, if a boy went through 5 years, or whatever it is, and gave satisfaction, he should then get some form of Government certificate. Do you think that would be any attraction?—*A.*—You mean to say that he should not be bound? No, I don't believe in the optional system. That will be no good for the boy, and no good for the employer.

Hon'ble Pandit M. M. Malaviya.—*Q.*—When did you start this business?—*A.*—Perhaps 25 years ago.

Q.—And you have always found a market for your articles—an increasing demand?—*A.*—Yes, I have no difficulty in disposing of my articles.

Q.—Are there other branches of the same trade in the Punjab; other firms doing the same business?—*A.*—Yes, there are others.

Q.—How many?—*A.*—I cannot give you the number, but there is a fair number in Sialkot.

Q.—Would there be half a dozen?—*A.*—No, more than that: I should say about 30 or 40, or more, in Sialkot alone.

Q.—Are there any other firms like that, outside Sialkot that you know of?—*A.*—I don't know if there is any factory for manufacturing athletic goods outside Sialkot.

Q.—Do you know of any outside the Punjab.—*A.*—No.

Q.—What portion of the cricketing and other gear do you supply to the country? About one-tenth or one-twentieth?—*A.*—That is a very difficult question to answer, because I am not in possession of the figures.

Q.—Are there special facilities for carrying on this trade at Sialkot; or is it merely because you started it there?—*A.*—There are no special facilities; it is only because I cannot leave my home.

Q.—I should like to know whether you bring the wood that you require from a long distance or whether you get it in the neighbourhood ?—*A.*—We bring our wood from various places. We bring our wood from long distances in some cases.

Q.—You say that you have had some English experts working under you. Can you tell me how many ?—*A.*—I have got two now.

Q.—When did you begin to employ these English experts ; at the very start, or after some years of experience ?—*A.*—I started this business, and when I found that I could not go further. I went to England and brought 2 experts and they helped me to a certain extent; but I wanted something much better. I wanted a man of international reputation. I went back again and brought a man who is one of the authorities in this trade.

Q.—And he is with you now ?—*A.*—Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Is he an Englishman ?—*A.*—Yes.

Hon'ble Pandit M. M. Malaviya.—*Q.*—How many years has he been with you ?—*A.*—Now 7 years.

Q.—You said that you are training your assistants under him ?—*A.*—Not assistants; I am training boys.

Q.—Is there any man whom you are training as an assistant to take the place of this expert, supposing he wanted to go back ?—*A.*—Yes, my own boy. He is very nearly ready.

Q.—Have you taken many apprentices outside your own circle ?—*A.*—Yes, I have trained hundreds.

Q.—Are they working now in the other factories that have been started in Sialkot or outside ?—*A.*—Everybody has to draw from me.

Q.—You think then there is much room for the development of this trade ?—*A.*—I do up to a certain extent.

Q.—You say here that education is the first necessity ; and then you say in answer to question 47 that you believe in early training in industrial schools, and you think that this should greatly help boys to get first insight, and should influence their minds to decide what business they would rather follow. Do you think that if in these elementary schools drawing and manual training, and a little knowledge of carpentry and smithy were introduced, either as compulsory subjects or as optional subjects, that would promote industrial development ?—*A.*—I do.

Q.—You would then have drawing and manual training in all elementary schools ?—*A.*—I think we should have an 8 hours industrial school, and should give 2 hours to arts and 2 hours to drawing and model-making, and 4 hours to carpentry or metal work.

Q.—That is a matter of detail.—*A.*—I do believe that industrial schools would be very helpful in developing industries.

Q.—You think that the object which you have indicated in answer to question 47 would be served if boys had this early industrial bent given to their education; they would then be better able to select what business they might follow ?—*A.*—Yes ; we can save a lot of waste of time if we had industrial schools. They will be the grounding place to find out whether a boy is capable of doing anything. No boys should be sent to an establishment and apprenticed for less than 5 years. Those boys who are any good can go to central institutions afterwards, and those that are no good can leave the school.

Q.—At what stage would you introduce manual training: after they had learned to read and write and cast up accounts ?—*A.*—Yes, and drawing also. First of all their mind must be trained a bit.

Q.—You say here that you would put the industrial and technical schools under the Department of Industries: what particular advantage would accrue from placing these technical schools under the Department of Industries ? Should they not rather be under the general Department of Public Instruction ?—*A.*—No, I think that will be a kind of dual control, because these Arts Inspectors can come and inspect the Arts side. They should have nothing to do with the organisation or management of schools, because the school should be run on business lines.

Q.—That would apply to industrial schools, but not to technical.—*A.*—Industrial schools as well as technical.

Q.—You say that "for the training and improvement of Supervisors and skilled Managers they should be sent to Europe or those countries where their particular business is a speciality, or experts from those countries might be imported for this purpose." I take it that you will agree that if experts are brought in, they will be able to train a much larger number of Supervisors and Managers than you could obtain by sending men out to other countries ?—*A.*—To some extent ; but if you want to train a man to handle a gigantic business, an expert cannot train that man, because there would be no such factories here, to enable him to see all the various departments of it. An expert may go to a certain extent, and a man may become a better mechanic than perhaps the expert himself.

Q.—Then in the case of select men, you would encourage them to go to other countries to study things for themselves there ?—*A.*—Yes.

Q.—You say that you have never heard of this Department of Industries doing anything substantial. Have you any idea of what work this department is doing ?—*A.*—I don't know. They simply get a few returns. As far as I know, I don't think they do anything, *i.e.*, anything substantial. I doubt very much if they understand anything about industries.

Q.—You say you think that it will be an advantage to the province that the Members of this Board should be recognised successful leaders of industries inthe province ?—*A.*—Yes, I do.

Q.—In the case of an Imperial Department, what is your apprehension; supposing you had an Imperial Department ?—*A.*—It would be a very heavy, bulky machinery, and all provinces will have to go to it for their Directorate : for instance, in some provinces you may get a set of very capable business men as advisers, who may go very quick; but if you have to get instructions from Simla, then you would only be able to do so much and no more.

Q.—You think that for the development of industries in the province, men in the province will be much more useful than men at some distant centre in the country ?—*A.*—I do.

Q.—You have suggested two industries, weaving and hosiery, in the shape of cottage industries. Are there any other cottage industries extant in your province which you can recommend ? Is button-making taken up ?—*A.*—No, I don't know.

Q.—In what form would you suggest this help should be given; in the shape of hand-looms and machines for making hosiery. For weaving in cottages, I suppose you mean that hand-looms should be given ?—*A.*—Yes.

Q.—In what way should they be given ; on the hire-purchase system ?—*A.*—The hire-purchase system would be much better.

Q.—Or merely lent out on hire ?—*A.*—The hire-purchase would be better.

Q.—Could not this best be done by forming co-operative societies which might co-operate both for purchase and sale ?—*A.*—Yes, that is a good idea.

Hon'ble Mr. H. J. Maynard.—*Q.*—You said that there were about 30 or 40 concerns at Sialkot which make sports goods ?—*A.*—There are many more.

Q.—Is not a very large proportion of those firms quite small concerns : are they not very small ?—*A.*—Yes ; of course if a man has got his own shop and turns out a few tennis rackets in a week, he can call himself a sports manufacturer.

Q.—They are mostly of that type. How many considerable firms are there who employ as many as 50 workmen ?—*A.*—I don't think there is any other firm in Sialkot employing anything like 50 men, except my own.

Q.—You told us that your wood comes in from long distances in some cases. Have you ever obtained any help from the Government Forest Department in the matter of your wood ?—*A.*—No help. I should say just the other way.

Hon'ble Sir R. N. Mookerjee—*Q.*—What do you mean ? That you were hindered ?—*A.*—They don't give us any facilities.

Q.—What do you mean ' the other way ' ?—*A.*—We draw our mulberry wood from Changa Manga. It is a Government plantation near Lahore, about 30 miles or so. Instead of running the show for the benefit of the sports manufacturers, they do it for their own benefit. They would not cut the necessary quantity of wood, and when they did cut the wood they would do it at such times and in such quantities as to induce artificial competition. For instance, supposing we wanted 5,000 feet of timber, although the timber was there, they would cut 1,000 feet only. All the men would go there, and instead of our having to pay the usual price of 8 or 12 annas, the price would go up to Rs. 3 or Rs. 3-8-0. Everybody fights to get the timber. They know our requirements ; they know what we want : if they cut the wood for us and sell it at the depôt rate of 14 annas, everybody could get it ; instead of that they cut small quantities and let the men fight and fight and keep up the price.

Q.—Have you written to them complaining of this procedure ?—*A.*—They are too independent to take any notice of complaints.

Q.—They may have a reason for not cutting such large quantities at a time. Have you ever enquired into the facts ?—*A.*—We have approached them two or three times. They say : " Oh no, we will do as we like Government has to see to its own interests, not yours."

Q.—Have you got any written correspondence about that ?—*A.*—I do not believe in written correspondence. I had to go and see them and make representations.

Q.—We take it from you that they auction the wood and don't give it to any particular persons— .—They auction month after month.

Q.—And whoever bids high, they get it ?—*A.*—Yes.

Q.—Do you object to that system ?—*A.*—I do, because there is any amount of mulberry, and they can grow much more than we require. If we don't buy the wood they sell it at 2 or 3 annas a foot. It is fortunate that we have discovered uses for mulberry; it is useful for making hockey sticks and other things. Now they have got sheesham and mulberry, but if they turned the whole thing into mulberry, they could not only get the necessary quantity of fuel, but they could keep us satisfied, and this industry would be very materially benefitted.

Hon'ble Mr. H. J. Maynard.—*Q.*—I suppose you will recognise that the Forest Department has to consider other interests as well as the interests of one particular industry. It would not be possible for them to say that mulberry is benefitted by such and such an industry and therefore we will grow it. They are obliged to weigh one interest with another.—*A.*—But they can serve two or three interests by doing the thing on business lines. What I object to is that there is no sense in it.

Q.—What particular feature of it ? Of course the Forest Department is a profit-making department.—*A.*—That is the one thing which comes in first with the department.

Q.—Is that, to your mind, the radical difficulty which prevents it from being useful ?—*A.*—They don't take an interest. They say: "We shall run this on red-tape lines; we don't bother whether you come or not."

Hon'ble Sir R. N. Mookerjee.—*Q.*—That is to say, their attitude towards the development of industries is not good ?—*A.*—No, they do not take the slightest interest.

Hon'ble Mr. H. J. Maynard.—*Q.*—There is a beautiful museum of different kinds of wood at Dehra Dun. Have you made any use of that ?—*A.*—Yes, we have been in communication with that institution.

Q.—Have you ever been to look at it ?—*A.*—No, I have not been, and there is no necessity to go. I know pretty nearly everything connected with my business; what wood we require and where it grows.

Q.—You don't think that would contribute anything useful to your knowledge ?—*A.*—We have had correspondence with those people, and they admit that what we want we can get only at Changa Manga.

Q.—About this matter of education, I understood you to say that the boys who have been to school pick up mechanical knowledge more quickly. You meant by that that the boys who have been to an ordinary elementary school pick up knowledge quicker ?—*A.*—They do. We find they pick up mechancial knowledge quicker; they are more intelligent.

Q.—From having gone through the ordinary literary education in a primary school ?—*A.*—Yes.

Q.—You don't mean to say an industrial school ?—*A.*—I have had no boys from a regular industrial school, and there are no industrial schools at Sialkot; but generally those boys who have attended an Arts school are more intelligent.

Q.—That applies to primary schools; but what about a boy who has been beyond the primary stage into the middle school ?—*A.*—I have replied to this question; because those boys who have passed their matriculation examination don't come. They think it below their dignity. I have had no boys beyond the primary.

Sir D. J. Tata.—*Q.*—About your visiting the museum at Dehra Dun; you say you know all about wood, so you don't need to visit the museum.—*A.*—I did not say I know all about wood; but all about the wood that I use in my business.

Q.—Are you aware that the institute at Dehra Dun makes enquiries into the various kinds of wood, and the uses to which they could be put. Perhaps you might find some other wood which may serve your purpose just as well, by visiting an institution of this kind. You know the general complaint is that there are not enough research institutes scattered about the country to help industries. Here you have an institution close to your door, and you don't take advantage of it ?—*A.*—I don't mean to dispute the usefulness of that institution but this industry is a very old industry in England, and we have got here the top experts and they tell us what our requirements are.

Q.—They tell you what are the woods used in England, because they only know the wood grown in Europe. But your expert would not know anything about the woods grown in India. For instance, I might tell you this morning some of us visited the Railway Workshops. A wood is at present being used there for making propeller blades of aeroplanes. This is quite different to any wood used in Europe, and the workshop people find that it is much better suited for propeller blades than the wood used in Europe. This particular

wood does not exist in Europe, but it exists here. In the same way you can find other wood that may suit your business. So, why this attitude of aloofness ?—*A.*—We are using a certain kind of timber which we find is admirably suited to us. So the Dehra Dun men can only tell us of some kind of wood which grows on the Himalayas. The question is whether that wood may be useful to us or not. Then comes in the question of freight; it might not be convenient.

Q.—Is not knowledge of any kind always worth having ?—*A.*—That it is all very well.

Q.—Have you heard about this particular kind of wood I am referring to ?—*A.*—I did not say I have knowledge of all kinds of wood.

Q.—What are the various departments in your sports factory ?—You manufacture cricket bats, tennis rackets, hockey sticks, footballs and cricket balls, are all made from materials obtained in this country, or from imported materials ?—*A.*—We import some materials.

Q.—With reference to the expert you have called in; what is he an expert in ? In all these things, or only in one or two branches ?—*A.*—In the majority of branches; but there are some things which he has not actually done, but has a thorough knowledge of.

Q.—You mean to say he has gained a certain amount of experience and knowledge after coming into this country, which he did not possess before ?—*A.*—Yes.

Q.—He is not a universal expert, but only an expert in a few branches ?—*A.*—When we showed him various kinds of wood and proved that they were better, he said : "Yes, you are doing very well."

Q.—Just as you proved to him that other woods are better, you might yourself find somebody prove to you that there are woods which might serve your purpose better. You say that you will bring up your own son to take up this work under the experts. Have you ever thought of sending him, or any of your relatives, to Europe to be trained in this business thoroughly ?—*A.*—All my boys have been educated in England, with the exception of one.

Q.—But have they been apprenticed to particular branches of the trade that you have taken up, in any way ?—*A.*—Later on they can go when they have mastered all we can teach them here. Then they can go to England.

Q.—Don't you think that such apprenticing is a great thing for people who are in certain industries to train their own children up scientifically in every branch of it, so as to be independent of foreign experts, and be able to do everything in this country themselves ?—*A.*—Yes, it is necessary, as I have said in my written evidence. Those boys who show promise and who acquire all that we can teach them in this country should certainly be sent to foreign countries to specialize in those subjects.

Q.—Here you have an industry for over 28 years in your own factory. There are ideal circumstances under which you should send somebody to be trained in Europe and specialize in your business. Don't you think you ought to take more advantage of the situation.—*A.*—I had to struggle first for 20 years to make two ends meet. I had to do the whole thing myself and fight against a hundred and one difficulties. When I made a little progress I said, "it will not be complete unless I go to England and bring out experts."

Q.—Instead of bringing out experts, could you not train your own sons in this profession by sending them to England ?—*A.*—They are very young. They have only become fit now.

Q.—In regard to industrial schools, what sort of education would you have in them ? Would you give that education in existing elementary schools as supplementary education; or would you have different schools ?—*A.*—No, different schools.

Q.—So you would have elementary schools giving ordinary education, and other schools where industrial education is combined with manual training. You would not combine the two in the same institution ?—*A.*—No.

Q.—Referring to the question of your workmen, you say that you were the first to introduce this industry; and you trained all the workmen, and that nearly all the workmen employed in other factories have been those trained by you ?—*A.*—I don't say "all"; but the majority, the non-artisan class. There is a certain class in this country called the artisan class, and they generally don't come to me for training.

Q.—Have you any complaints with regard to that ? Do you suffer in your business, owing to your workmen being enticed away by others ?—*A.* Yes, I do.

Q.—Have you any suggestion to make as to how to prevent that ?—*A.*—Beyond a certain age I cannot prevent boys and men going to other factories. I suggest introducing some sort of apprentice law, by which we could keep the boys for a certain period.

Q.—As your workmen leave you, do you go on training more men ?—*A.*—Yes.

Q.—So you get all the workmen you want? You have no difficulty about that?—*A.*—We have to work very hard and persevere.

Q.—In answer to question 49 you say: "Young men who are learning or have learnt their business should be given every facility for attending night or short-time day schools, more especially those who feel that this education will help them to get more efficient." By whom should this facility be given? By employers like yourself?—*A.*—Yes, by employers.

Q.—That means you will let them off their work hours to go to school, and pay them during the time they go to school? Is that not what you mean?—*A.*—I don't mind doing this.

Q.—Have you ever done anything of this kind—let the young men learn a trade under you; give them two hours; pay them for full time, and let them spend those two hours in a school?—*A.*—Most of the boys are illiterate. I have not done anything in this line.

Q.—You say young men should be given every facility. By whom?—*A.*—I mean by Government.

Q.—How should Government give facilities to boys in your employ. They are employed by you; you work them for 8 hours; where are they to find time, unless you release them?—*A.*—They can do that in the evening.

Q.—After working 8 or 10 hours in your factory?—*A.*—They actually do not work for more than 6 or 7; they do not get exhausted.

Q.—Is it not your duty also to help them?—*A.*—Yes, to some extent.

Q.—Then why don't you do it yourself? Later on you say: "Government should make grants to the firms who send men to become efficient to foreign countries." You propose that you should send men to foreign countries and that Government should help you to do so?—*A.*—I don't mean that Government should help me personally.

Q.—By making grants to firms who send men to become efficient, you mean firms like yours; and for the purpose of establishing private industries which are not of national importance?—*A.*—Not for myself, because I am sufficiently advanced; but for those industries which are in their infancy. Government should help these.

Q. You say: "These grants may be in the shape of free passage, or so much a year for the time they are learning, or a percentage of the whole expenses." These are private industries; why should Government pay for the education of these men at all. Don't you think the firms themselves should do it?—*A.*—I think Government should help new industries, because they won't do any substantial thing without Government help. When I was answering this question I was not meaning my own business. I said, new industries.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Were you the first man who started this industry?—*A.*—I cannot say that I started this. There was this industry, but in a very crude way they used to make badminton and tennis rackets for some time.

Q.—And now you are making the articles as good as the English?—*A.*—As good as anything in the world. We claim that we make better things. Englishmen in this country say so. I have got in writing opinions from leading English tennis players.

Q.—As you say, this industry has greater scope for expansion in India; if so, you can make more and send outside India and compete with others. At what price have you been selling; at a lower price than imported articles?—*A.*—Yes.

Q.—How much lower 10 or 15 per cent.?—*A.*—Yes, we sell them cheaper; we sell them in many cases at the same prices, and in some cases at cheaper prices.

Q.—What is the highest price you get for a racket?—*A.*—The highest is Rs. 25.

Q.—Have you got any school in Sialkot like the Government Railway School here? Have you seen the Government Railway School here?—*A.*—I have not been to that school, but I know there is a railway school somewhere near the railway station. We have no technical industrial school in Sialkot.

Q.—I would advise you to visit this school; it will interest you a lot. Having no industrial school, you have to take raw boys?—*A.*—Yes, we have got to take raw boys.

Q.—And apprentices come to you; do you start them with any pay?—*A.*—We take him for a month or two to see whether he is any good.

Q.—At what age does he come to you?—*A.*—We take him at any age, but not under 12 or 13. We train all classes.

Q.—What is the highest pay an Indian draws in your place?—*A.*—Do you mean Indian workmen?

Q.—Yes. What is the chance for an apprentice if he comes to you; in how many years does he reach the highest pay?—*A.*—He can make about Rs. 50 or 60.

Q.—What does your English foreman draw?—*A.*—Rs. 400.

Q.—You brought him on an agreement of 4 or 5 years?—*A.*—Yes.

Q.—And he gets lodging free?—*A.*—Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Your work is piece-work?—*A.*—We have both systems, piece and daily wages. Generally we run our factory on piece-work.

Q.—When you say a man gets Rs. 60, he earns Rs. 60?—*A.*—Yes.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You give out work on piece-work?—*A.*—Most of the work is piece-work. It is very difficult to get work out of the workmen without any system. You will require so many more supervisors.

Q.—What is the chance of a man becoming an overseer of the works? You must have many Indian overseers to work under the European?—*A.*—Yes, we are training them.

Q.—What is the highest pay the man who is under your European foreman draws?—*A.*—We give them sometimes Rs. 70 and Rs. 80.

Q.—Where do you get your machinery from; is it English? Have you got English machinery?—*A.*—Yes, a lot.

Q.—Is the Japanese article competing with you?—*A.*—I don't think they can turn out athletic goods.

Q.—But are any Japanese goods coming which compete with you?—*A.*—I think they are sending some sort of tennis rackets.

Q.—Are you suffering any railway difficulties in sending your articles to other places at high rates?—*A.*—Yes, very much.

Q.—Suppose you have to compete and send your articles to Bombay, competing against European goods, then do you send by railway from here to Karachi and from Karachi to Bombay by sea?—*A.*—We are very handicapped; we have to pay much more freight from here to Calcutta than perhaps from London to Calcutta. I don't supply English goods to the Calcutta Branch, but have to ask my London agents to send, because it is cheaper. Freight from London to Calcutta is less than from here to Calcutta.

Q.—You think that a man who has learnt this business is a better man to be sent to Europe to learn that profession with the help of Government scholarships?—*A.*—What I meant was that, supposing a man has learnt all he could under an expert, and he showed promise, Government should come, not in the interests of that employer, but in the interests of the country. If they get hold of a man who shows he is efficient, he should be sent to England or some other country to specialize, because he may be a better man than their expert.

Q.—Now Government are sending scholars to England and other countries by giving scholarships?—*A.*—Most of them are no good.

Q.—They get a man from college and ask him what profession he wants to learn?—*A.*—That is a great mistake.

Q.—They ought to take a man who has learnt the business here?—*A.*—That is why we are getting a kind of set-back. These men, when they go to foreign countries, learn nothing. If a man wants to learn, nobody can stop him from learning. If a man is the son of so and so he is selected and sent to England, that is a wrong system.

Q.—About apprentice law, what is this apprentice law that you want to have?—*A.*—They have a special apprentice law in England. The apprentices are in a way the property of their employers for the time being. Supposing a boy runs away, they can inform the nearest magistrate, and the boy will be fetched back at once. We have no system here, with the result that much of the time and money spent on these boys is lost, because before they have made any headway, they run away.

Q.—For how many years do you want these people to be apprenticed?—*A.*—5 to 7 years to get very efficient, because a boy requires 3, 4 or 5 years to learn it, and then he gets very efficient after 7 years.

Q.—Are you suggesting that to your Government here?—*A.*—Yes.

Q.—How many hours does your factory work in the day?—*A.*—We work 8 hours.

Q.—You just said about the financial help. You had no Government financial help to make a very large factory from the beginning?—*A.*—No, not only no financial help but not even the requisite knowledge. Here people are setting up businesses without any knowledge at all, with the result they fail.

Q.—Are there other factories as big as yours in Sialkot, employing European supervision?—*A.*—No.

Sir F. H. Stewart.—*Q.*—Your business is a success now?—*A.*—I should think so.

Q.—And you have a good many branches in different places?—*A.*—I have 4 branches; Calcutta, Madras, Lucknow and Delhi.

Q.—When you started, I suppose most of the sports for which you supply goods, cricket, football, hockey, etc., were confined to Europeans?—*A.*—Yes.

Q.—Indians did not play them much in those days?—*A.*—Indians knew these things before I started, and that was why I took it up.

Q.—Do you make golf clubs?—*A.*—Yes.

Q.—Have you found suitable timber for golf clubs, shafts and so on?—*A.*—Hickory, which is American wood.

Q.—You have not found suitable wood in India?—*A.*—I made experiments, but did not get.

Sir D. J. Tata.—*Q.*—Did you try Dehra Dun?—*A.*—No.

Hon'ble Pandit M. M. Malaviya.—*Q.*—You said that the Forest Department think of their own profits and do not think of helping the trade?—*A.*—I don't say the only difficulty is their profits. They don't take an interest except in their own department.

Q.—Did I understand you to say that they have been raising the price of the wood that you require, as the requirements of your industry have been growing?—*A.*—They are not raising. They are doing the business in such a way that the raising of the price is the result.

Q.—Is the wood that you use required very largely for other purposes, so far as you know?—*A.*—So far as I know it is not used for any other things.

Q.—You said that they would sell a thousand feet at one time and then hold up and sell another thousand feet later on, when there would be a great demand in the market for it, instead of fixing the price and allowing people to order as much as they wanted, in which event you and others in this trade could get wood cheaper and on fairer terms?—*A.*—Yes, because we could send in our indents.

Q.—What you would wish to be recommended is that a certain price should be fixed and that indents should be taken in hand and the wood supplied when the demand for it has not risen in the market. Would you recommend that the price should be fixed when the demand is not very high in the market?—*A.*—Do you mean, generally speaking.

Q.—You say they send out a thousand feet at one time; then you wait and the thousand feet are to be shared by half a dozen firms, so the price rises. What do you recommend; that the thing should be available throughout the year, so that anyone indenting may get it on fair terms without there being this keen competition for it?—*A.*—Yes, somewhat on those lines.

Q.—Have you any other suggestion to make, in order that this difficulty should be avoided?—*A.*—I think that the place is big enough for keeping the sports trade running all the year round, and they can perhaps get more wood than we require, if they took an interest in the thing. I admit in some cases perhaps mulberry wood is not as much as is required, but if they took an interest and if they grew the wood, I mean on business lines, they could get much more than we want, and there is great scope for that.

Q.—Would you put in your suggestions in a definite form as to what you would want the Commission to consider as a possible recommendation to help your trade, and send it to the Secretary. We would like to know how help can be given to this trade, in order that it should develop.*

Mr. C. E. Low.—*Q.*—You suggest that people should be allowed to indent for mulberry wood at a fixed price?—*A.*—Yes.

Q.—Should they be allowed to indent for as much as they wanted?—*A.*—You mean that it may be abused? You mean a man wishing to "do" other firms "collars" the whole thing and sells it at a higher price? Is that what you mean? That can be provided against.

Q.—I am afraid it is not so simple as you think. That is also the difficulty, that Government may be accused of favouritism?—

* Not received at the time of going to Press.

WITNESS No. 374.

LALA HARKISHEN LAL, *Bar., at-Law, Lahore.*

WRITTEN EVIDENCE.

Financial aid to industrial enterprises.

I have had, so far as the Punjab, Sindh, and parts of United Provinces are concerned, considerable experience of the raising of capital directly as share-capital of industrial joint stock concerns, and indirectly through banks and insurance concerns. I have found difficulties in raising, in these parts, share capital to any very large extent by public advertisement because of— Capital.

(1) the want of experience in the investing public ;

(2) want of means of large and extensive publicity ;

(3) limited number of people who could or would invest in industrial concerns, the result of which had not been demonstrated or established ;

(4) limited resources of investors ;

(5) non-attractive terms as to return on their money by ordinary industries, as all the industries which could be started without speciality of knowledge or speciality of privilege were exposed to unlimited competition from outside the country and in the country itself ; and lastly because

(6) absence of recognised underwriters, brokers and canvassers.

Raising of capital indirectly, however, through shares and deposits of joint stock banks and insurance concerns was, comparatively speaking, easier, but I am afraid that day has also gone, on account of the folly of the majority of people concerned, and wickedness of some Indians and Europeans, want of sympathy on the side of authorities (not to use any stronger term) and the spirit of competition of Anglo-Indian banks. Therefore it is not only essential but imperative that this source of raising capital should be revived by all legitimate and effective means, as no civilised industrial country has done much or can do much by way of industrialism or commercialism without banking backing. Even in England they are now feeling that efforts in this direction are needed to improve their own industries and trade. So far as the Punjab is concerned, the only source of real wealth of the people at present being agriculture, co-operative banks movement ought to be strengthened, extended, improved, localised and capital drawn from this source to industries ; as savings of town trade people are generally very meagre and the official world cannot amass sufficient wealth to give a real impetus to industrial enterprise.

I have no personal experience of any financial or other aid by Government to any industrial enterprise, but I think for the conditions brought about by world competition, and by the recognition of the fact that financial State aid has been given to industries in old countries it is essential, considering the low industrial level to which we have been brought, that very liberal financial aid by Government should be afforded, and the method of giving Government aid should not be confined to any one or two of the methods suggested in question 5; but all the methods should be declared permissible ; one or more, most suited to particular cases, to be resorted to when applications for aid are received and approved. Government interests and public interests require that the aid afforded from public funds should not be wasted, misapplied or waylaid, and measures should be taken to guard against such risks ; but no hard-and-fast rules are required, nor any greater precautions are necessary than in the case of money lent for such purposes by such institutions as the Bank of Bengal and the Bank of Bombay. Government caution sometimes degenerates into a regular interference and this must be avoided. Government assistance.

I am not acquainted intimately with any industry pioneered by Government in these parts, but I know that Government does its own dairying, runs extensive Railway Workshops in connection with North-Western Railway, and owns a Forest Distillery (Turpentine). In my view Government should directly pioneer industries where— Pioneer factories.

(*a*) Government-owned raw materials are going waste and are not being and are not likely to be utilised for industrial purposes ;

(*b*) Government is a large consumer of manufactured articles, and they have to be bought out of India where they are produced at an enormous cost, though they could be produced in this country at a much smaller cost ;

(*c*) similar undertakings, in private hands outside of India, are on an enormous scale requiring skill and labour beyond private control ;

(*d*) a flourishing industry carried on on obsolete methods is languishing and requires special skill and organization to revive; which private enterprise is unable to undertake;

(*e*) In short in exceptional cases only, where it was not possible to induce private enterprise to come in.

Government pioneer enterprise should be limited only to such time that the chances of creating private enterprise to undertake the same are not forthcoming, excepting where for considerations of political and financial necessities, a State monoply becomes desirable.

Banking facilities.

I am afraid that the existing banking agencies in the Punjab are useless to render any assistance to existing or future industries in the land, and for reasons of banking failures of 1913-14 special efforts are needed to organize purely Indians banks with avowed objects of helping trade, agriculture, industry, and social requirements, respectively, with suitable organizations, and suitable capital.

The existing Company law is quite sufficient, and I am dicidedly of opinion that no further legal interference is either needed or desirable. The laws recently passed such as Prime-Movers, Factory Inspections, Boiler Inspections, even the Railway Act are worked unequally, and hamper rather than help or guide; and lead in many instances to positive discouragement.

Limitations to Government aid.

In my view Government aid should not be refused to any new enterprise, simply because it would compete with an established external trade; otherwise in the present condition of things Government aid will not be available in all the numerous directions which are indicated by the ever-increasing list of imports.

II.—Technical aid to industries.

So far as the Punjab is concerned no technical or scientific aid has ever, to my knowledge, been afforded by the Government to any industry, nor are there any industries excepting wheat-grinding and cotton-ginning of any magnitude worth mentioning. But leaving the execution of research aside for the time being, it will be very useful for the Province if Government started demonstration industries connected with oil-crushing, and industries arising out of oil, and also metal industries so far as every-day needs of the people are concerned, both for the urban and rural populations.

Other aspects of the inquiry would be premature for this Province, but as it is not likely that the Government would institute any periodical surveys of the industrial situation it is necessary and essential that an Industrial Board on the lines of City Improvement Trusts, be instituted fully representative of Indian interests, and a Technical Education Board be organised on the lines of Senates of Universities like the Cambridge and Oxford, which Senates and Boards will thus combine the functions of enquiry commissions and organizing institutions, with liberal finances at their disposal.

III.—Assistance in marketing products.

Exhibitions.

I have some experience of an industrial exhibition as I was the General Secretary of the 1909-10 Punjab and North-West Frontier Exhibition held at Lahore, and I can testify to their utility, and I am of opinion that in each Province, industrial exhibitions should be held every 5 years to mark the progress made in the provincial industries in the interval; and Government should not hold but aid the idea of local periodical exhibitions, and aid and co-operate liberally to enable the exhibitions to be held. If held at regular intervals these exhibitions will help emulation and ambition, raise the standard of efficiency and excellence, introduce varieties, help marketing and create expert critics. These exhibitions should combine the features of popularity and utility in bringing buyers and sellers together. They may in addition to local exhibits invite exhibits from outside only in such lines as may be useful for the development of provincial resources or meet provincial needs. They should not be an immense and merely random collection of what could be collected as a show.

Government patronage.

I certainly think that the lists of Government requirement should be published in each Department and samples exhibited in Commercial Museums.

IV.—Other forms of Government assistance.

Land policy.

Pre-emption laws and land alienation laws are drawbacks to industrial development, but as the means of industrial development are otherwise limited the effect of these laws is not fully understood.

If Government and Railways should be prepared to find free land near the Railway Stations and give facilities in finding sidings, such help would be much appreciated. The

present policy of auctioning lands in new colonies for industrial purposes is not at all fair as the least informed generally bids the highest, and makes a mess for himself and for the better informed and equipped.

V.—Training of labour and supervision.

This is a very entertaining and interesting subject to write a book upon, but as even a beginning has not been made in industrial enterprise in these Provinces it would be useless to write about what might be, but the most pressing problem is the scarcity of labour.

VI.—General official administration and organization.

So far as I am aware there is no organization in the Punjab for the development of industries, excepting that the Director of Agriculture is also the Director of Industries. What he actually does in this respect is not known to me, or for the matter of that to any man having anything to do with industries.

I recommend the institution of a Board of Industries and of a Board of Technical Training with executive powers and budgetted funds, sufficient for the growing needs of industries as they develop. They will certainly have to be assisted by experts and executive officers. The senior of them who may also be the Secretary to the Board may be designated as Director of Industries.

He should certainly be a man of industries and not a mere non-technical official.

In order to consolidate the separate activities of the various provinces I think periodical conferences should be devised, and an Imperial Department under a Member of Industries might give special impetus and save much duplication of Government aid.

Cottage industries.

So far as the Punjab is concerned I think special measures should be adopted to encourage and foster house and cottage industries specially suitable to women workers; as woman in the Punjab, for various economic and social reasons, is becoming an article of luxury merely, and a drone.

VII.—Organization of technical and scientific departments of Government.

Study of foreign methods.

I think not only the technical and scientific experts engaged in the industrial enterprise of the country, but the proprietors and managers should also be encouraged by money grants and by arranging opportunities for them to visit foreign lands, and to study the methods of production, the efficiency of the organizations, the superiority of the articles produced, and methods of marketing, etc.

Reference libraries.

I have had, in my earlier career, to consult endless catalogues, booksellers and others to discover authoritative works on industrial and financial matters, and therefore I am of opinion that libraries of such literature would prove useful, but such libraries should be, public or part of public libraries and not exclusive.

Colleges of commerce.

If an Industrial Board such as recommended and some industrial institutions are started I think a College of Commerce will also be needed to train accountants, secretaries, auditors, agents (sale and purchase) and afford opportunities to directors and proprietors to study the business side of undertakings.

Local bodies.

If a Provincial Industrial Board and a Technical Education Board are fixed, the Municipality and Local Boards may then help only in the holding of district exhibitions, starting district industrial and commercial museums, encouraging local enterprise by advice, grant of aid, and recommendations to Industrial Board, Trade Commissioners, etc. If the Provincial Boards are not appointed then these authorities might make a beginning in the way of aiding and originating industrial schemes.

VIII.—Government organization for the collection and distribution of Commerical Intelligence.

All I can suggest in this respect is that the statistics may be published separately, province by province, in some cases, and in the case of new and growing industries they ought to be instituted early. They ought to be published in the dailies and weeklies by arrangements with the papers. The same should apply to the Commercial Intelligence. "Indian Trade Journal" is not so well known as it ought to be, and Government should certainly assist purely industrial and trade journals, at any rate up to a time that they become self-supporting. They should be helped with money and if required with information and intelligence. I have had several shots at these, but had to give up the enterprise for lack of support.

Special monographs.

I have perused many monographs issued by Government but do not recollect to have ever received any practical help of any kind. It may be my own fault. This applies to Forest, Geological and Provincial Industries monographs. Their chief fault is that they

are not practical. In the compilation of these I would suggest that in addition to departmental activities, outside activities should also be utilised.

These and trade journals should be published in the vernaculars of the provinces where their usefulness may be conceived.

Government should publish information regarding the 101 industries and trades of foreign countries, more frequently and more generally than the information available in the country, as this would in some cases help the foreigner more than the people here.

IX.—Other forms of Government action and organization.

Adulteration. Penalties should be imposed in the case of adulteration of all raw materials, whether they are wheat, cotton or anything else.

Prosecution, however, should be at the complaint of the users and not at the instance of the police or of any special department; but the inspection may be compulsory at the complaint of the user by a body of expert traders.

Registration of partnerships. I do think a system of registration and disclosure of partnerships would prove useful.

Transport facilities. The transport monopoly of the North-Western Railway does hamper people a great deal. The roads are fairly good near about large towns, and they should be improved in the villages. Waterways were very useful at one time; and if the canals be adopted to this purpose trade and industry will be grateful.

Railway rates. The railway freights are open to the following criticism:—

(*a*) They have been designed to help the export of raw-materials and to discourage the export of manufactured Indian goods, and practically *vice versa* so far as the foreign goods are concerned;

(*b*) They have shown and can give preference;

(*c*) They help the ports at the expense of the internal cities;

(*d*) They are enhanced and reduced arbitrarily without notice, and sometimes these alterations effect great and real damage to industries.

I would say railway rates should be in the hands of a special board and subject to certain rules of appeals.

Railways are being extended all right.

Shipping freights. Shipping freights to Egypt on flour were found to be very disadvantageous.

Hydro-electric power. There is I believe in the Government record room, much information in connection with hydro-electric power of which the public knows very little.

Forest Department. I have nothing specific to say, excepting that I plead for sympathy in the Forest, as in all the Government Departments, more of the commercial and less of the magisterial tone in their dealings with traders and industrial people; if something in this direction is really intended to be done.

New industries. New industries, which could be started in the country.

General.

1. Woollen industries.
2. Glass-making.
3. Wine-brewing and distilleries.
4. Leather manufacture.
5. Metal works.
6. Machinery-making.
7. Oil industries.
8. Railway requirements, excepting perhaps rails and heavy iron.
9. Hundreds of articles of stationery.
10. Food industries.
11. Medicinal industries.
12. Ceramic industries.

All raw materials exported, excepting perhaps some minerals, could be worked into manufactures here, if the people had the capital and the enterprise, and for sometime protection and not free trade was the economic policy of the Government.

ORAL EVIDENCE, 11TH DECEMBER 1917.

Sir F. H. Stewart.—*Q.*—You describe yourself as a merchant*.—You are also a Barrister-at-law ?—*A.*—Yes.

Q.—Which were you first ?—*A.*—Barrister-at-law.

Q.—How long have you been engaged in mercantile enterprise ?—*A.*—Exclusively for the last eighteen years.

Q.—You do not practise the law now ?—*A.*—I am not a practising Barrister now.

Q.—Would you enumerate to us some of the principal industrial enterprises with which you were connected in this province ?—*A.*—Ginning, spinning and weaving, flour-milling, glass-making, match-making, metal, brick-making, oil-pressing, timber industry. I think these are the chief ones.

Q.—In what capacity usually ?—*A.*—Usually as a director or managing director or partner or proprietor.

Q.—Did you find yourself able to devote the necessary time, knowledge and attention to so many different interests ?—*A.*—In some cases I was not personally looking after the concerns and in some other cases I was personally looking after the things. Whether I looked after the things personally or not, I could find time to supervise.

Q.—With reference to the difficulty which you found in raising capital directly for industrial concerns you mention one factor, " absence of recognised underwriters, brokers and canvassers." Would you like to see a regular stock exchange in the big centres ?—*A.*—I do not think that could give much aid. At present underwriters do not exist, but when underwriting did come that would help. Brokers and canvassers would come in the natural course of progress.

Q.—Official stock exchange quotations would be of help ?—*A.*—Yes.

Q.—Is it a matter to which you have given any thought ?—*A.*—Not much.

Q.—With reference to the raising of capital indirectly, you speak of the ' folly ' of the majority of people concerned. What do you mean by ' folly ' there ? Do you mean ignorance ?—*A.*—Ignorance and not taking proper steps to enquire as to the exact position of the banks.

Q.—You mean on the part of investors ?—*A.*—Yes, investors and depositors.

Q.—You speak of the wickedness of some Indians and Europeans ?—*A.*—Yes.

Q.—What do you mean by that ?—*A.*—I mean a conspiracy set up with the determined object of destroying the banking of the Punjab, in which officials and non-officials joined, and made every possible effort, and took every possible measure to destroy banking which would have really done immense good to the province and to outside.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Would you use the word ' conspiracy '?—*A.*—Yes.

Sir F. H. Stewart.—*Q.*—On the part of officials and non-officials ?—*A.*—Yes.

Q.—That is stronger than what you say in the next sentence, " want of sympathy on the part of the authorities, and the spirit of competition of Anglo-Indian banks." Do you mean more than the ordinary competition for business which naturally exists ?—*A.*—Yes. A great deal more.

Q.—What do you maintain was the object of those people ? You say they desired to destroy banking industry in the Punjab ?—*A.*—They would know their object themselves, but I could say that they did not want Indian banking to flourish, and very likely they thought that left to itself it would prove a formidable opponent or competitor to their business. And I have a shrewd suspicion that there had been some effort made that the banking in India should be the monoply of a certain class of people and as that monopoly was likely to be broken by the efforts made by the Punjabees in banking enterprise they naturally thought of and took whatever steps they could to destroy it.

Q.—You mean to say that there was an organised opposition to the growth of banking in this province by people who were endeavouring to establish monopolies ?—*A.*—Yes.

Q.—After the unfortunate crisis of four years ago there was a natural sudden withdrawal of confidence on the part of the investing public ?—*A.*—Yes.

Q.—Do you see any signs of that confidence beginning to revive ?—*A.*—I do find an improvement in the situation of the banks that exist, but not very much.

*In his original statement witness described himself as a merchant.

Q.—Do you believe yourself that there is much personal wealth in this province that might be made available for industrial undertakings ?—*A.*—I do believe there is a surplus income in the agricultural colonies especially, which might be utilised partly for industrial enterprises.

Q.—And more than that surplus, is there not a great deal of accumulated personal wealth in some of the districts ?—*A.*—I am not aware of that.

Q.—How do you think that this wealth might be possibly tapped ? Do you think that it must be indirectly by reviving the confidence in banking ?—*A.*—I should think for a long time that would be the right process.

Q.—You do not think that it will be put directly into industries ?—*A.*—Not for a long time.

Q.—The Punjab being primarily agricultural ?—*A.*—Yes.

Q.—In the event of Government financial aid you do not want hard-and-fast rules or any greater precautions than are laid down in the case of such institutions as the Banks of Bengal and Bombay ?—*A.*—No.

Q.—We have had plenty of evidence tendered to us with the idea of proving that under the Presidency Banks Act these banks are prohibited from lending as much assistance as they might wish to industries. Do you know anything about that ?—*A.*—I know that the Act does prohibit it, but I know this that they do lend money where they want to do it.

Q.—You say—" Government should directly pioneer industries where similar undertakings in private hands outside India are on an enormous scale requiring skill and labour beyond public control."—You mean beyond public control or private control ?—*A.*—I mean public in the sense of non-officials. ' Private' expresses it better.

Q.—Under the heading ' Banking facilities ' you say—" The existing company's law is quite sufficient." You have also told us something about the folly mainly based on the ignorance of the investors. Don't you think that they require further protection in the way of legislation, special banking legislation perhaps ?—*A.*—I do not think so.

Q.—You admit that in very many cases it is extreme ignorance ? The investor is extremely ignorant as to the nature and limitations, potentialities and risks of joint stock enterprise ?—*A.*—But that does not come in. There is nothing special which really affects him in dealing with the joint stock banks. Joint stock banking, so far as he is concerned, is to become a person under the company's law, but beyond that it is as good or as bad as any other banker. There is nothing special there that really makes difference in the case of a bank started under the joint stock system to an ordinary banker.

Q.—But would it not be in the interests of the ignorant to prevent any one who may wish to start a bank from doing so ?—*A.*—No case has been made out to prove this.

Q.—Because he might deceive the ignorant ?—*A.*—He has not deceived them in the past.

Q.—With reference to the Industrial Board that you recommend I do not quite follow you there. You say that you would like to see something of the nature of a City Improvement Trust. Do you mean that there should be an official executive with elected and nominated members of the Trust ?—*A.*—I was not thinking in the way of constitution, but I was thinking of the initiation. The Improvement Trust goes about a thing without being moved from outside. That is what I had in view, that this Board should take steps on its own initiation and move in the matter of starting, helping, encouraging and initiating enterprises without being moved from outside. That was what I was thinking of and not of the constitution.

Q.—Your idea is that you would like such a Board constituted and you would like it to have as ample funds as possible budgetted and placed at its disposal and leave the initiation of projects to it ?—*A.*—Yes, in some cases to initiate projects also.

Q.—Would you place any limitations ? Supposing the budget of such a Board was two or three lakhs of rupees in a year would you place any Government limitation and say that if it wanted to spend more than Rs. 20,000 or something of that sort on a certain undertaking it should not be done without going to Government for sanction ?—*A.*—That might be done provided that does not waste time. That would not do any harm.

Q.—What position would your Director of Industries occupy on that Board ?—*A.*—I have suggested as Secretary.

Q.—Do you mean as Secretary in the sense of being the servant of the Board so far as its projects are concerned, or would he be the President of the Board ?—*A.*—Not the President of the Board. As a Secretary subordinate, but not necessarily a servant, to the Board.

Q.—But he will be a whole-time man ?—*A.*—Yes, in many municipalities there are secretaries who are whole-time men, but the Secretary is not the President of the Municipality. He does look after the executive as well as the administrative work.

Q.—In municipalities the Secretary has well-defined powers ?—*A.*—Those well-defined powers could be developed in this case also.

Q.—Supposing there was a difference of opinion between the Director of Industries and the members of the Board how would you meet it ?—*A.*—The Board ought to prevail.

Q.—Without reference to Government ?—*A.*—Yes, without reference to Government.

Q.—Under other forms of Government assistance you say, "pre-emption laws and land alienation laws are drawbacks to industrial development." We have had evidence tendered to us that the introduction of the land alienation law diverted a good quantity of money from agriculture to industries. What is your comment on that ?—*A.*—I am not aware of that.

Q.—You would not accept it ?—*A.*—No. I am not aware of any money having come into industry from agriculture because of the Land Alienation Act.

Q.—But if there was a man who had a certain amount of spare money his first idea was to put that into land, and if he was prevented from acquiring land by thisparticular Act he might turn round and say, 'I will put it into industry' ?—*A.*—That might be an exceptional case. It has no universal application to all classes. There are certain classes who are free to sell land. I am not aware of any real effort by any individual or individuals to divert their money from agriculture to industries.

Q.—Under 'General official administration and organisation' you recommend the institution of a Board of Industries and a Board of Technical Training. Two separate boards ?—*A.*—There might be one. Why I wanted to have two boards is that in the one case more industrial people will take part in the board and in the other case more educationists will come in who will be entirely useless in an industrial board as such.

Q.—The technical training would be directly under the Industrial Department ?—*A.*—That is a matter of convenience. There is no matter of principle involved.

Q.—Does it not involve a matter of the principle that you do not want two masters ?—*A.*—Masters of whom ? Masters of the students ? In one case masters of the students and in the other case masters of the workmen. They are two different things.

Q.—Are we not trying to turn more students into workmen ?—*A.*—You might. That is another matter. I do not see that there would be any conflict and I do not see that there would be any difficulty. If any serious effort is made to tackle these two problems seriously the work would be enormous and therefore I think there should be two boards.

Q.—Who would preside over your Board of Technical Training ?—*A.*—The president whom they elect, or the Government appoints as the constitution may be settled.

Q.—You do not think that it is necessary that he should be the Director of Industries ?—*A.*—No.

Q.—With regard to cottage industries you want some special steps taken to encourage and foster them ?—*A.*—Yes.

Q.—Would not that naturally be done by the Board of Industries ?—*A.*—May be done by it.

Q.—They might, if necessary, have special sub-committees or something of that sort to deal with them ?—*A.*—Yes.

Q.—With reference to the collection and distribution of commercial and industrial intelligence you say that more use should be made of it. Would you apply your remarks to vernacular papers also ?—*A.*—Yes.

Q.—Would it answer its purpose if you disseminate information through vernacular papers also ?—*A.*—It would be a great deal more useful.

Q.—That is in preference to publishing monographs ?—*A.*—Yes.

Q.—In section IX you say that you think that a system of registration and disclosure of partnerships would prove useful. Do you see any great difficulty in the way of

that being brought about ?—*A.*—No very great difficulty ; occasionally when a suit is brought in court we do find some real parties missing or wanting not to come forward and we miss the big fish. That does happen sometimes.

Q.—But you think that this difficulty can be got over ?—*A.*—Yes, by registration.

Q.—And you think that Government should legislate ?—*A.*—I do think so.

Q.—It would too, in your opinion, promote business relations ?—*A.*—It would facilitate matters.

Q.—About railway rates you would like to see these in the hands of a special board ?—*A.*—Yes.

Q.—You would like that board to have non-officials on it ?—*A.*—Naturally.

Q.—Would it have to be a permanent board or a standing committee or what ?—*A.*—I think it would be much better if it is a standing board because they will get the experience. If it is changing constantly it may not get the experience. But it would not matter much if the system of appointment of directors is followed, *i.e.*, some people to retire after a certain time as it happens in the senates of the universities and Boards of Directors and then a few other people are nominated or appointed to this board.

Q.—You would like a standing committee that would meet once or twice a year to revise rates generally ?—*A.*—Once a year provided the rates are not chopped and lopped every day as they are done now. Otherwise they should be sitting every day.

Q.—You said that some Indians and some Europeans jointly tried their best to put down banking in the Punjab. At the same time the management was defective, was it not ?—*A.*—No ; on the contrary I think it was an ideally good management. It was not only good management but ideally good. It was without any fault whatsoever. It was much better than of many European banks.

Q.—Was it not a fact that these banks took money on short deposits and lent it to the concerns on machines and other securities, and when the money was called for by the depositors the banks were not able to pay ?—*A.*—You are quite right so far that they took money on deposits and lent it on machinery and buildings, but they followed the splendid example, or the good example of other banks managed by Europeans existing in the neighbourhood in the Punjab and the United Provinces and in Calcutta also.

Q.—Is the money lent by the banks in this way ?—*A.*—Yes money is given in Calcutta on the security of debentures. Debentures are issued for very huge amounts and money is lent by banks on the security of these debentures.

Q.—Are they exchange banks or Presidency banks ?—*A.*—Presidency banks as well as other banks.

Q.—The Presidency bank under the law cannot give money on debentures ?—*A.*—On the security of debentures they do advance.

Q.—Are they lending money on debentures in Calcutta ?—*A.*—Debentures are collateral securities.

Q.—The Presidency bank ?—*A.*—Yes.

Q.—The failure was not on account of the depositors demanding their deposits and the banks being unable to pay ?—*A.*—Every bank would fail in that way. The people wanted their deposits back and the banks could not pay them back.

Q.—You say that the securities were ample and that shows that they could have paid ?—*A.*—Yes ; several have paid sixteen annas. In spite of the bad management of the liquidators they have paid sixteen annas to the depositors.

Q.—And the people who had invested in the concerns and commercial enterprises, did they get anything ?—*A.*—You mean the share-holders of the banks ?

Q.—And of the industrial concerns. Did they get their money ?—*A.*—How would they get money ? They had to pay being debtors.

Q.—Have the share-holders of the banks got their money back ?—*A.*—Not the share-holders but the depositors have got their money back in many cases.

Q.—Share-holders did not get their money ?—*A.*—The share-holders would have got their money if the liquidation had been more careful and more scientific. But in some cases they will get back a portion. The consideration of the share-holders was set aside from the very start by the liquidation.

Q.—You were a director of the People's Bank ?—*A.*—Yes I was the managing director.

Q.—You were up to the last ?—*A.*—No, up to 2½ or 3 months before its failure.

Q.—This bank had a good many branches up-country ?—*A.*—Yes.

Q.—Were those branches paying ?—*A.*—Excepting perhaps 10 per cent of the branches all the other branches paid. Every branch became paying within 8 or 12 months or at the utmost 18 months.

Q.—Why did you leave the bank three months before its failure ?—*A.*—I felt then that in my own board and in official circles I was not liked. Some of the directors were carrying tales to the Government officials, and I thought that I might retire for the good of the bank.

Q.—Money which comes from the Punjab through the sale of agricultural produce, how is it utilised ? Is it at present deposited with the exchange banks ?—*A.*—Part of it. There is only one exchange bank, the National Bank of India at Lahore but the Chartered Bank has also a branch at Amritsar, but the exchange banks are not spread over the province. The other banks which are not really exchange banks are spread over and they are receiving some deposits.

Q.—What is the general discount rate for the hundis ?—Are the Multani shroffs here ?—*A.*—One is permanently here.

Q.—Is the general hundi business carried on by the Multanis or also by the Punjab people ?—*A.*—When the Punjabi banks were really flourishing hundi business had been taken over from all kinds of bankers and Multanis by these banks.

Q.—At what rate generally the banks used to take money here on deposit ?—*A.*—Ranging from four to six per cent.

Q.—And they were giving out at what rate ?—*A.*—7½ to 9 per cent. generally.

Q.—Is the rate governed by the Bank of Bengal rate ?—*A.*—No.

Q.—It depends upon the seasonal demand ?—*A.*—Yes, and influence with the directors.

Q.—Is the Punjab money deposited with the Presidency banks outside the Punjab ?—*A.*—I do not know whether it is invested outside the Punjab very much, but it is deposited very largely with the Presidency Bank here.

Q.—Was there any co-operation between the Indian banks when they failed ?—*A.*—No, there was no co-operation. There was fighting.

Q.—Did the Government try to help these banks at the time of difficulty, to get money from the Bank of Bengal or some other concern ?—*A.*—They did nothing of the kind, but I should say if possible they put obstacles in the way.

Q.—What is the reason of that ? Because there was no business knowledge on the part of Government officials ?—*A.*—The reason I think is want of sympathy, altogether want of sympathy. The Registrar of Joint Stock Companies was in the hands of the Anglo-Indian banks at the time.

Q.—If a proper industrial bank is started here, will it get industrial business ?—*A.*—Started from outside.

Q.—From here or outside ?—*A.*—Do you mean to ask whether if capital came from outside there was any scope for investments ? Is that your question ?

Q.—I am talking of Government starting an industrial bank in your province. Will it help industries ?—*A.*—Yes ; capital always helps industries, and it follows that the industrial bank will help industries in this province also.

Q.—Will people take advantage of it and start industries ?—*A.*—I should think so.

Q.—On what line should the Government start an industrial bank for the province ? Do you now think that if Government start such a bank the people will have more confidence after this crisis ?—*A.*—I do think that some Government co-operation is needed.

Q.—On what line ought the bank to be started ? I ask you that question because you are the proper person to give us some scheme. Do you think that Government should put in their reserve funds or subscribe to the capital ?—*A.*—I do not believe in paper schemes at all and therefore I have not thought over one. If the Government wants to start a bank the matter can be discussed at the time.

Q.—It is the duty of the Commission to suggest to Government what sort of a bank they should start ?—*A.*—I have not thought over it. I have not any scheme because

I do not believe in paper schemes. You might recommend but your recommendations will be considered by officials who will have less experience or knowledge and therefore it is useless really to develop any scheme.

Q.—We want to do our own duty and we want other men to do theirs ?—*A.*—I do not think it worth while to take trouble, and I have not taken any on it.

Q.—Do you want the Industrial Board to be on the lines of the City Improvement Trust of Bombay ?—*A.*—Yes, I do not lay so much stress on the question of what its constitution ought to be as on the point that it should have the power of initiation and the capacity for initiation. That is my point. Whether it is on the lines of the Bombay Trust or Calcutta Trust or some other Trust it is immaterial to me.

Q.—You say—"Government caution sometimes degenerates into a regular interference and this must be avoided." Have you any experience of this Government interference ?—*A.*—I could not at this time give you any particular instance. That has been my general impression from the many things that have come to my knowledge; the long correspondence that goes on and the conditions that develop, practically the whole thing falls to the ground.

Q.—Have you studied or have you seen the working of the hypothec banks of Germany and Japan ?—*A.*—I have not seen that, but I know something from book knowledge on the subject.

Q.—Do you think that the banks should be started on that principle ?—*A.*—I think so.

Q.—You say that you were the General Secretary of the Punjab and North-West Frontier Exhibition held at Lahore in 1909-10. Was it a financial success ?—*A.*—It was a financial success. Government gave us one lakh of rupees and we gave back Rs. 70,000 to Government.

Q.—Do you think that museums should also be established ?—*A.*—Yes.

Q.—About the railways, do you think that the Government should appoint a committee to go into the question of railway rates and that would solve the problem ?—*A.*—Yes. That would be one way of getting over the present anomalies.

Q.—You say—"Penalties should be imposed in the case of adulteration of all raw materials whether they are wheat, cotton or any thing else." You want legislation ?—*A.*—That is the only way to penalise offenders.

Q.—Don't you think that it would work hardship on the cultivator ?—*A.*—No, the cultivator deserves it if he does the adulteration. I say further that the initiation should not be taken at the instance of the police but the party aggrieved. If the agriculturist or cultivator cheats other people he deserves to be penalised as much as anybody else.

Sir D. J. Tata.—*Q.*—You have just told us that you are the managing director of several industrial companies ?—*A.*—Yes.

Q.—When you started these industries were they new to the country ?—*A.*—By the country you mean the Punjab ?

Q.—Yes.—*A.*—They were not quite new.

Q.—You felt that there was an opening for them, and that the time was ripe to start them ?—*A.*—Yes.

Q.—In starting these companies did you investigate fully into the possibilities of success ?—*A.*—Yes. As far as I could I took all the possible pains and I enquired into the question of raw material, labour, finance, and especially when I was starting a spinning mill I visited Cawnpore, Ahmedabad and Bombay, and I took advice from your revered father before I started it.

Q.—You said you were the managing director of most of these. Did you have any technical knowledge of any of these industries; or did you work them on the strength of your general business knowledge ? Did you have experts ?—*A.*—I had no technical knowledge in detail of any of these things, but of course I had a general technical knowledge, but not really deep technical knowledge.

Q.—You had expert advisers ?—*A.*—Yes. I always employed trained people from Bombay or Europe.

Q.—Those industries did not succeed mainly for want of capital ?—*A.*—That was one of the reasons. It is not true that these industries did not succeed, because in flour-milling we have not altogether failed. In ginning we sometimes succeeded and sometimes we lost money as other people do. But in the case of the Lahore Spinning Company it was very unfortunate, but it was due to a series of accidents.

Q.—Accidents of what kind ?—*A.*—Floods, fires, bad markets. That concern has been very unfortunate from 1908, but another concern of a similar kind which I handled at Moradabad was a success.

Q.—I want to take up your reply to Sir Fazulbhoy's question before I come to other questions. You said that the management of the banks that were started was ideal ?—*A.*—Yes.

Q.—Who were the directors of the banks, and how were they selected ?—*A.*—They were mostly selected at the beginning from people who had done no banking.

Q.—Did it lead to ideal management ?—*A.*—Yes, because they took pains and studied and they were cautious.

Q.—Who nominated them ?—*A.*—They were the promoters to begin with. They started the things on patriotic grounds. The first bank that we started now exists as the Punjab National Bank. That was started purely on patriotic grounds and by people who did not care merely for money. They wanted to start banking and do banking and they did it.

Q.—Were the directors largely interested in the capital ? Did they subscribe themselves ?—*A.*—Yes. To start with they were.

Q.—Was their holding just sufficient to qualify them as directors, or was it a substantial one ?—*A.*—Not substantial in the way in which Bombay people would look at it, because there was not much money ; but still sufficient for their means and much beyond what is required for a director's qualification.

Q.—About what proportion of the capital ?—*A.*—I could not give you that. At one time in the Punjab National Bank one director held as much as Rs. 40,000 or nearly about that out of two lakhs.

Q.—Paid-up capital or authorised share capital ?—*A.*—Not exactly. The whole capital was not called up. Whatever was called he had paid, nearly Rs. 20,000 probably.

Q.—In your written evidence you say that one of the difficulties of raising capital is want of means of large and extensive publicity. Have you not newspapers ?—*A.*—The best known newspaper in the Punjab published in English has not larger circulation than 2,200.

Q.—Of course you issued circulars ?—*A.*—Unless you know the names of likely parties it is no use.

Q.—You say that another cause is " the limited number of people who could or would invest in industrial concerns, the result of which had not been demonstrated or established." That means you wanted people to subscribe from patriotic motives ?—*A.*—At that time.

Q.—Naturally people would not subscribe unless they felt sure of a good return on their investment ?—*A.*—Now that is the tendency. When I started my career in this direction it was patriotism pure and simple on my behalf and on behalf of the investing public.

Q.—As to the class of investors you say—" So far as the Punjab is concerned the only source of real wealth of the people at present being agriculture, co-operative banks movement ought to be strengthened, extended, improved, localised and capital drawn from this source to industries ; as savings of town trades people are generally very meagre and the official world cannot amass sufficient wealth to give a real impetus to industrial enterprise." Who then will subscribe ?—*A.*—Agriculturists so far as the Punjab is concerned.

Q.—They have the money ?—*A.*—Yes. They are the favoured persons at present and they are making money in every possible way.

Q.—As regards Government assistance you say—" Government interests and public interests require that the aid afforded from public funds should not be wasted, misapplied, or waylaid and measures should be taken to guard against such risks." What sort of measures ?—*A.*—The thing ought to be secured on proper documents and proper enquiry should be made, and I state that the measures should not be more stringent than in the case of the Presidency Banks.

Q.—You say—" No hard-and-fast rules are required, nor any greater precautions are necessary in the case of money lent for such purposes by such institutions as the Bank of Bengal and the Bank of Bombay. Government caution degenerates into a regular interference and this must be avoided." You mean something beyond the precautions you allude to ?—*A.*—No. My experience is that the Government is very nervous in launching out a new scheme so far as the people are concerned. That has been my impression all through my life. They make so many enquiries, so many investigations and lay down so many conditions that the thing never comes to pass.

Q.—Government is not a business body ?—*A.*—It should be.

Q.—From the very nature of its form do you think Government can be ?—*A.*—I think the scope of the State now is very different. In Europe it is socialism that is developing and we expect the State to move on socialistic lines in the East also.

Q.—You say ; " For reasons of banking failures of 1913-14 special efforts are needed to organise purely Indian banks." If purely Indian banks had been established they would have avoided failures ?—*A.*—These were Indian banks which failed. I do not say that at all. Now that they have failed, to bring them into existence again further assistance is required, and further I say that instead of having a bank of all sorts there should be banks, say, one with the avowed object of helping agriculture, another for helping industry, a third with the distinct and avowed object of helping social requirements, and so on.

Q.—By social requirements what do you mean ?—*A.*—If a man wants to build a house or marry his daughter.

Q.—Surely the State is not concerned with marrying anybody's daughter to anybody else ?—*A.*—That is my view. I will explain my point. It is not my point that the State will marry daughters of its people. But if banks come into existence with the assistance of Government at present, then the object of one of the banks will be in some cases to help in social matters and another for agriculture and so on.

Q.—Why do you say—" to organise purely Indian banks ?"—*A.*—I do not know of Bombay, and from the little I know there is a great deal more co-operation between the Europeans and Indians there, but here there is a wall between, and for that reason I say purely Indian banks.

Q.—Then you say—" the laws recently passed such as Prime-Movers, Factory Inspections, Boiler Inspections, even the Railway Act are worked unequally and hamper rather than help or guide and lead in many instances to positive discouragement." You talk of many instances. Could you give us one or two ?—*A.*—Instances in which the railways hamper ?

Q.—Laws relating to prime-movers, factory inspection boiler inspection, etc., are surely meant to help in every possible way. ?—*A.*—I will give you one instance in which I would have been hampered. The Factory Inspector came to a spinning mill and told us to keep the windows open for twelve hours all the year. In January here at six o'clock he wanted the windows to be kept open when the temperature is below zero. If I had followed him I would have had to stop my factory.

Q.—It is perhaps not due to the laws so much as to the way in which they are administered by ignorant officials ?—*A.*—This particular official was an M.A. of an English University.

Q.—The law did not actully demand this. You do not want to change the law so much as to get a better class of officials ?—*A.*—The Factory Law has been in existence for sometime and I have never received any good suggestion or a workable suggestion from any Inspector that I have met.

Q.—You do not see the thing from his point of view ?—*A.*—He should see it from my point of view, if he is to help my industries. He comes to me and I do not go to him. He comes to me and he should see that he comes to help me and not to hamper me.

Hon'ble Mr. H. J. Maynard.—*Q.*—Is there not a certain amount of conflict of interest between the employer and the employé, and is it not one of his duties to protect the workpeople ?—*A.*—In my factory that question has never arisen. A conflict between the workpeople and the employer has not arisen yet in my experience of about 20 years in this Province.

Sir D. J. Tata.—*Q.*—You are very happy. Why then do workmen strike at all ?—*A.*—I have never had to face any strike.

Q.—Is it not natural that the interests of the employer and the employee should sometimes conflict ?—*A.*—Theoretically I would admit, but that question has not arisen

here, and the Factory Inspector has never helped the workmen or helped me in any way. I do not know what might happen in the future, but that has been the past.

Q.—There are little points like guarding dangerous machinery ?—*A.*—People are at loggerheads sometimes without any sufficient cause.

Q.—In section II about technical aid to industries you talk of metal industries. Is there any opening for metal industries in this province ?—*A.*—So far as metal industries are concerned my view is that metal industry is required everywhere and especially in the Punjab where we are accustomed to use a great deal of metal in making household utensils. They used to be manufactured locally but now in some cases enamelled ware is taking their place though it is quite worthless. That kind of industry exists all over the country, especially in the Northern India. I do not know Southern India and I do not speak for it. In Northern India the metal requirements for household purposes are very large and industries relating to these could be organised and developed in many ways. Not only that, but there are a lot of metal things like bicycles in daily demand. That is a metal thing. I do not know whether an industry of that kind cannot flourish in every province.

Q.—What about the raw products ?—*A.*—What raw products do you want for bicycles.

Q.—For all metal industries you must have raw products ?—*A.*—That might be in one case true, but not true in this case because the quantities of metal required in most metal industries is small and the quantity of labour and skill is a great deal more. Therefore a metal industry of that class can exist and flourish anywhere if properly organised and properly worked.

Q.—You talk about liberal advances at the disposal of the board. How do you propose to get these liberal advances ? By more taxation ?—*A.*—Why more taxation ? Why not by retrenchment in the present waste of money that goes on in several departments of Government ?

Q.—On the subject of other forms of Government assistance, you say—" The present policy of auctioning lands in new colonies for industrial purposes is not at all fair as the least informed generally bids the highest and makes a mess for himself and for the better informed and equipped." What other method do you propose ? Would that not mean favouritism ?—*A.*—Anything which is not auction is not favouritism. My own view is that if anything is done reasonably and rationally in the public interests without auctioning the thing it is as fair as auction and perhaps more.

Q.—Does it not seem that the only fair way is to put it up to auction ?—*A.*—Not necessarily.

Q.—The fault is not with the method ?—*A.*—Would you like mining concessions also to be put up to auction ? May I ask that question ?

Q.—It is not for me to answer questions ?—*A.*—All over the world mining concessions are not put to auction. The present rule I understand is that there should be approved applicants and the theory of approved applicants knocks the bottom out of the auction theory at once. Then they have to be selected.

Q.—There is a question of priority of application ; but we need not enter into that ?—*A.*—Very well.

Q.—I do not quite understand what you mean when you say about the Secretary of the Board—" He should certainly be a man of industries and not a mere non-technical official." You mean that he should be a non-official with technical knowledge ?—*A.*—I say he may be an official if he is a technical man. He ought to be a technical man. That is my point.

Q.—About the organisation of technical and scientific departments of Government you say—"Proprietors and managers should also be encouraged by money grants and by arranging opportunities for them to visit foreign lands." Do you mean that public money should be spent for the benefit of privately-owned concerns ?—*A.*—I do mean that.

Q.—These proprietors of concerns ought to be monied men ?—*A.*—Not necessarily. Supposing a man starts an industry like pencil-making, he need not be supposed to have a very large capital in his hands ; if he is given an opportunity of going to and studying the thing in America he might do a great deal of good.

Q.—Would it not be better to give a scholarship to somebody who has shown an aptitude ?—*A.*—Why suppose that proprietors are not likely to show aptitude ? Why not take the right man ? Scholarship comes out of public funds. The industry is there

and if the proprietor who has spent money and studied the subject ought not to be helped, but a raw young man should be helped, that would simply be a wrong application of the money.

Q.—We had witnesses who said that the scholarship should be given to a man in a particular trade who has also shown some aptitude for it ?—*A.*—That is my view also, and that is what I have been suggesting in my preceding answers.

Q.—I asked the last witness why he did not send his son to England to be trained in his own line. Is that not the type of man that should be sent on scholarship ?—*A.*—Father or son ?

Q.—Son ?—*A.*—I say the father now, and then perhaps the son later. I am a businessman and my son wants to be a poet !

Q.—Keep him on short rations and under restraint ! You say that he should go over there to study the methods of production, the efficiency of the organisations, etc. You know there is a general complaint that the people who are sent out to foreign countries do not get opportunities ?—*A.*—That is no doubt the complaint, that they do not get the facilities, but efforts should be made in this direction also.

Q.—Is there no remedy ?—*A.*—You must provide the remedies.

Q.—A little lower down you say—" A college of commerce will also be needed to train accountants, secretaries, auditors, agents and afford opportunities to directors and proprietors to study the business side of that undertaking." Do you propose that proprietors of business should go to the college of commerce and study there ?—*A.*—I am now thinking of the son and not of the father ; the son who is not going to be a poet.

Q.—You mean his son would be sent to learn ?—*A.*—Yes.

Q.—You say that Government should assist purely industrial and trade journals. Might they not as well start them themselves ?—*A.*—In some cases they would make a mess of them if they started these and therefore they ought to help people who start these things. I might explain one thing. You think that Government assistance ought to be as little as possible. My belief is otherwise. As foreign competition has brought about the state of affairs under which we exist, it is the bounden duty of Government to help us in every possible way ; and that explanation will be a clear answer to many of the questions that you have been putting to me. I believe this that the action of the State to a very large extent has brought about the condition of things above-mentioned, so far as the economic side is concerned. The establishment of industries is a question of politics. It is the bounden duty of Government to assist us in every possible way whether it is by creating industry, by giving scholarships for going abroad, or by starting museums, etc. Everywhere Government aid is needed and ought to be forthcoming.

Q.—Don't you think that a child is able to walk better if left to itself than if helped too much. If you constantly hold the hand of the child, and make it walk you will find the child walk at a much later age than if left to itself to make its own effort to walk. In the same way, don't you think that if the person who wants help is allowed to rely more on his own resources and makes his own efforts he would be stronger ?—*A.*—That illustration would not apply. If I do not give the child food, whether I hold his finger or not it is useless to expect him to walk. The whole question is of the food. If I do not feed my children could they walk ?

Q.—Do you want to put the food into the child's mouth, or would you like the child to learn to eat its food ?—*A.*—There is very little difference. The food must be provided, that is the point.

Q.—With regard to railway freights, is there any general complaint in this district about them ?—*A.*—Every trader and every industrial man who really goes into this matter has some complaint, and I personally had any number of complaints and any amount of correspondence with the railway authorities almost all my life.

Q.—I ask you this question because I came across a sentence in a book which has been published by Mr. Badenoch on " Punjab Industries" recently in connection with the visit of the Commission. It says—" The members of the Provincial Committee were asked to give details of any instances where the railway rates were unfair and not a single reply was received. "—*A.*—He did not consult me. I can give you a number of instances. The freights on cotton work out per mile a great deal more to the Lahore Spinning Mill than to Cawnpore Mills. All the Cawnpore Mills had special rates for both wool and cotton.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Special rates ?—*A.*—Yes, special concessions for Cawnpore Mills.

(The witness here promised to send in a statement* showing discrepancies in railway freights.)

Q.—They have shown preference as between whom ?—*A.*—Between Europeans and Indians and between Indians and Indians; between the man who salams and the man who does not salam.

Hon'ble Sir R. N. Mookerjee.—*Q.*—The railway company has shown preference ?—*A.*—Yes, and especially the North-Western Railway.

Q.—You say—" I would say railway rates should be in the hands of a special board and subject to certain rules of appeal." You want to go outside the Railway Board for fixing them ?—*A.*—When I say a board it might be a representative board of various companies.

Q.—You want a special board ?—*A.*—Yes.

Q.—You know there is the Railway Board ?—*A.*—But it has not the time to go really into these rates.

Q.—They simply leave it to the Traffic Manager ?—*A.*—Not only generally but always.

Sir D. J. Tata.—*Q.*—There is only one more question I want to ask you. About hydro-electric power you say—" there is I believe in the Government record room much information in connection with hydro-electric power of which the public knows very little ? "—*A.*—I do not mean as a complaint. I state that there is a good deal of information.

Q.—Is it not the fault of the people themselves rather than that of anybody else if the information exists and they do not go and seek it ?—*A.*—It is the fault of the people of the other provinces because we have not got money enough here in this province to handle these things.

Hon'ble Mr. H. J. Maynard.—*Q.*—I am not quite sure that I caught one thing that you said. Was I right in thinking that you said that the Anglo-Indian banks were leading the movement against joint stock companies ?—*A.*—They were in the movement.

Q.—Against joint stock companies ?—*A.*—Against banks.

Q.—Did they object to the success of the Indian banks ?—*A.*—Naturally that is the inference.

Q.—Were they generally unsympathetic to the Indian banks ?—*A.*—From 1913 and perhaps 1912 I found that, but not before.

Q.—What I wanted to ask you is this in particular. The Anglo-Indian banks as one may conveniently call them, have got a common clearing list of their own, or a common clearing house ?—*A.*—I think they have one now.

Q.—Is it not rather a convenience and a good thing to be on that clearing list for business purposes ?—*A.*—Yes.

Q.—You know the Punjab National Bank ?—*A.*—Yes, and I knew that very well at one time.

Q.—It is one of those purely Indian banks ?—*A.*—Yes.

Q.—Do you know that the Punjab National Bank has been admitted to the clearing list of the Anglo-Indian banks ?—*A.*—I do not know it except from you. Recently it might have been admitted.

Q.—That was not an unsympathetic action on the part of the Anglo-Indian banks ?—*A.*—I do not think there is any concession involved there. There is no favour involved. This is simply for the convenience of transacting business. I do not think it is a favour one way or the other because their cheques will hang on at the Punjab National Bank, if out of the clearing house. I do not think that would meet my point.

Q.—It is a privilege which is rather a coveted one and it has been extended to this bank ?—*A.*—It is as much a privilege from the Punjab National Bank to those banks as from them to the Punjab National Bank.

*Not received when going to Press.

Q.—It is admitting them to a sort of friendly relations?—*A.*—Yes. Very likely they might have done it now.

Q.—I think the Punjab National Bank is one of those which did survive the banking crisis?—*A.*—Yes. It exists and therefore it survived.

Q.—It has not been reconstructed since?—*A.*—No.

Q.—That, of course, is another alternative?—*A.*—It has not been reconstructed.

Q.—Do you think there were any particular reasons why the Punjab National Bank survived when the other banks failed?—*A.*—I think that some of the directors of the Punjab National Bank who were leading the movement against the other banks foresaw this and did not invest money a year beforehand, and they had all their available money in the till. I think this comes out from their balance sheet.

Q.—You do know I suppose and probably you have heard that the Punjab National Bank was sufficiently imperilled to have to make certain enquiries regarding the possibility of raising money on its Government pro-notes?—*A.*—Yes. I know it as a fact.

Q.—Is it not like as though they too were in danger?—*A.*—That might be taken as a precaution or it might be a danger, but the further argument is that they were not helped either.

Q.—At all events they felt themselves sufficiently precarious?—*A.*—I know this that they tried to negotiate a loan on Government paper with the Bank of Bengal which was refused at first, and it might have been done as a precaution or it might have been because they felt a difficulty.

Q.—At all events they felt that it was necessary to take precautions?—*A.*—Evidently.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Refused on account of margin or absolutely refused.—*A.*—I do not know the inner working of that thing, but so far as my information goes it was absolutely refused at first, and it was not a question of margin.

Hon'ble Mr. H. J. Maynard.—*Q.*—We did have evidence on this particular point from the Punjab National Bank and we were told by the witness who gave evidence relating to this particular transaction of that year, that the local manager of the Anglo-Indian bank gave them sympathetic reception but the head office at Calcutta refused the loan?—*A.*—Possibly. He would know that particular fact better than I do.

Q.—That particular witness, at all events, seemed to have the impression that the local manager was not unsympathetic, though owing to ignorance and distance the remote manager was not sympathetic?—*A.*—I am not familiar with these facts.

Q.—It is a point that one might fairly draw attention to in connection with the attitude of the Anglo-Indian banks. ?—*A.*—There is a great deal more to be said against the Anglo-Indian banks.

Q.—I suppose you will have an opportunity of saying anything further and I should like to ask you just a question or a few more. You think that the Anglo-Indian banks really wanted to injure the Indian banks?—*A.*—I do think that.

Q.—Can you tell me this? Is it not rather a dangerous thing for one businessman or a business corporation to do anything to bring about a state of affairs in the commercial world or the money market which might possibly react on himself or itself?—*A.*—Sometimes it is dangerous.

Q.—Would not you for that reason *primâ facie* expect that a reasonable man who is after all actuated by considerations of profit and so forth, would he not be rather nervous of doing anything to bring out a crisis in the commercial world or the money market?—*A.*—If everybody was as wise as you put it now I should agree with you, but there are other motives which really guide human life than wisdom every time, and I do not know whether they ever thought at the time that the rush would go on to the Anglo-Indian banks, but it did go.

Q.—They actually imperilled themselves?—*A.*—Yes.

Q.—Do you think that the men of business who are generally fairly dispassionate did not foresee this risk and they were carried away by some sort of strange passion?—*A.*—That I do not know.

Q.—But you expect reasonable men of business not to venture in that way?—*A.*—That ought to be their future conduct.

Q.—That being what one would expect of a reasonable man of business, have you got any tangible facts on which you ground your belief that these banks did act contrary to the ordinary principle and that they did act in a hostile way quite apart from want of sympathy which is a different thing ? I am speaking of a deliberate wish to bring injury to another which is different from mere aloofness and mere unwillingness to help ?—*A.*—I have proofs that they did talk very much against Indian banks to almost every customer that called on them in those days, and I have reason to believe that some of the officials were really taking counsel with them at the time, and there are such things as competition, jealousy and envy in the world.

Q.—You mean Government officials ?—*A.*—Quite so. I also know that an application was made by an European to an Anglo-Indian bank for loan and he was first asked to state that this loan would not benefit any Indian in any form or shape or any existing bank in any form or shape ; and he was told that if he assured them of that the loan would be negotiated, otherwise not. Such things came to our notice very frequently in those days.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Are you prepared to give any names ?—*A.*—Yes, and not only that, but my informant is present at this gathering,

Hon'ble Mr. H. J. Maynard.—*Q.*—I understand you really to say that these banks which were managed by businessmen were really actuated by a sort of racial passion ?—*A.*—That is my impression and I have not hesitated to express it in those terms.

Q.—Do you think that this was a sort of racial passion that suddenly came into existence ?—*A.*—I do not know whether it came into existence sudderly, but I was aware that in official circles this racial element existed for a long time.

Q.—It is very important really to know exactly what you mean. We all of us can understand if you talk of official aloofness but you talk of something like a definite hostility. Are you at liberty to say with your experience of the official that over and above his aloofness and his possible lack of sympathy you find him definitely hostile ?—*A.*—I did find it in my case. I do not know of other cases. I know certainly that there was hostility in my case, so far as my institutions and myself were concerned. There was a theory started that I was getting too powerful and official hostility started on that account. I was told that by a high official who at one time held a very high position—and heard from another who held a very high position also in this province—that that was the feeling among the Secretaries of the Punjab Government at one time and among many other officials.

Q.—You think it was a matter personal to you ?—*A.*—That is No. 1. No. 2 is that a theory was started that these banks were finding funds for sedition ; and this came out to me from a gentleman who came to make enquiries from me and who is supposed to be a C. I. D., an Indian, who is a titled man and a very favoured man.

Q.—You think that there was a special feeling against yourself on the ground that you were too powerful ?—*A.*—Yes, against myself ; as well as against banking, and that one ground was given to me by a man who came to make enquiries whether these banks were not fomenting sedition and finding funds for sedition. Hardly had our career as joint stock bankers started when some European officials and non-officials took an adverse attitude.

Q.—Could you be more specific ?—*A.*—If you want the names I do not mind to give them even in public.

President.—*Q.*—You are giving your evidence publicly and you are bringing grave charges and you are a lawyer ?—*A.*—Yes.

Hon'ble Mr. H. J Maynard.—*Q.*—You would naturally not wish to mention names, and I have asked you whether there was anything specific ?—*A.*—The specific thing was that when I first broached the idea of an insurance company—that was the first Indian insurance company in India — the attitude taken by the official Europeans and by some commercial Europeans in the Punjab was hostile. One official especially discounted me and wrote that I was hardly out of my teens, and that I was the leader of a gang of robbers, that remark very likely still exists in the official records. That was in 1896 before I had any opportunity of robbing anybody.

Q.—I suppose the management of this insurance company is another about which it is quite possible to have a great many criticisms, is it not ? It is quite possible, I mean in perfectly good faith ?—*A.*—In perfectly good faith there may be criticisms, but it would be bad faith to call a man who wants to start an insurance company a leader of a gang of robbers ; and the remark in question was made before this company had existed three months.

Q.—If you mention this statement publicly it would in some manner affect your reputation. Would it not be advisable to tell this privately ?—*A.*—It was reported to

Government by an official who had absolutely nothing to do with insurance, that is to say, by a gentleman who held the position of a Deputy Commissioner in the Punjab, and he wrote this to the Government.

Q.—Now you have told us you believe that the Anglo-Indian banks were hostile to you in particular ?—*A.*—To me in particular as the leader of a movement.

Q.—Not merely apathetic but really hostile ?—*A.*—Quite so.

Q.—Now in giving your reasons I think you told us what their feeling was: is there any reason for supposing that these banks had such a feeling towards you personally ?—*A.*—I know this much from the way some of the banks treated me that there was no question really of injuring their business interests. For example, I wanted to open a bank account and I sent the money, the account was refused.

Q.—What date was that ? Was that when the Indian joint stock banks began to get into trouble or before ? Can you give us approximately the date ? I think the crisis took place in 1913 ?—*A.*—Yes.

Q.—Can you give us the approximate date ?—*A.*—I began to feel the hostility in 1912.

Q.—Can you say that there was anything in 1912 which would explain the hostility which apparently did not exist before ?—*A.*—I do not know whether it did not exist before, but it was not so pronounced.

Q.—Was there anything in 1912 which explains its becoming more pronounced ?—*A.*—The dealings that we had, we had dealings with these banks, namely, the treatment of cheques, and of hundis and drafts and all these, suggested their attitude.

Q.—But didn't you have business with these banks, wouldn't they be pleased to get business from whatever quarter it comes ?—*A.*—That is perhaps probable; whether they would be pleased or not or whether they did their duty or not, I can't say but they discouraged it; they not only discouraged it but made remarks which really did harm and were being brought home almost every day to me.

Q.—Is it not rather dangerous to have these eaves-droppers and to be too ready to listen to stories brought by people which are not quite true ?—*A.*—I think that you are right as a matter of philosophy, but there is no other way of getting at the information.

Q.—Coming back to the point I was asking whether you are aware of anything in 1912 which gave rise to this feeling ?—*A.*—That is what I am saying. Ever since 1912 I began to feel that hostility.

Q.—That is what I wanted to get at. Is there any particular cause of that something appearing in 1912 which did not appear before ? That is all I want to know—*A.*—Cause, special cause, any feature of my conduct ?

Q.—I do not say that, I do not know what it was ?—*A.*—I think they began to get concerned and very likely they found the leader of a movement or leaders of a movement that will carry it on and then . . . .

Q.—That is what I wanted to get at. They are also normal business men, this new business must have assisted them too ? Why was it that at a particular time they apparently did not assist ?—*A.*—That question ought to be asked from them rather than from me, why they refused it, but I felt that they were refusing. I have found that they were discouraging and all that; but why they did it that of course it is for them to answer, not for me.

Q.—You really cannot suggest the reason I understand ?—*A.*—Well, the reason is hostility I have suggested it, but whether A was employed or B, or how it appeared I must go behind the scene.

Q.—The reason of that hostility you cannot suggest, is it so ?—*A.*—The reason of that hostility I have suggested; that it is rivalry and competition; that I was getting into popularity and all that kind of thing, and that Indian banking was really going to oust European banking and also the joint stock banks excited the jealousy of the co-operative banking movement which really the Government wanted to back. If you want to hear all that, I can write out everything for you; there was a great deal at the back of it.

Q.—You think it was simply growing rivalry ?—*A.*—I cannot say, but possibly so.

Q.—Hostility produced as I understand by rivalry ?—*A.*—Well, that is how I look at it, but they may have some other reasons.

Q.—That is your suggestion ?—*A.*—That is my suggestion.

Q.—At the time it made its appearance in 1912, were you still succeeding or were there beginning to be some little doubts as to whether..... ?—*A.*—I do not know.

Q.—Was Swadeshi business as successful as before the crisis came in 1913 ?—*A.*—The crisis came in 1913 no doubt. It was not a crisis which came, it was brought about—I think I must use the word that the crisis was brought about in 1913. It did not come. If we use that language then of course we understand the position better.

Q.—What was the date of the beginning of this feeling ?—That is the dispassionate way of putting it ?—*A.*—The date of it was 1912.

Q.—What I meant was this—Do you think that it was due to suspicions and doubts in the minds of these Anglo-Indian banks regarding this business; was that the reason of their unfriendly attitude ?—*A.*—You again ask me what really passed in their minds, what information they got or what attitude they had, I cannot say unless I enquire from them.

Q.—But I put it to you ?—*A.*—It is a question of fact, what really took place; I am not aware of that fact, I am aware of the consequence, and therefore what might have been the fact in their mind I cannot say.

Q.—I just put it to you as a thing would actually happen with business for profit—Was there anything else when they began to have no regard and held aloof ?—*A.*—I do not know whether doubts began or that they were considering how to crush me then; I cannot say, very likely they were.

Q.—You think it possible that they might have doubts regarding . . . . . ?—*A.*—Well possible, anything on the face of the earth may be possible, that of course is a quite different thing.

Q.—From the ordinary business point of view the simplest explanation is that they could have had no motive except one of business ?—*A.*—If the men were really guided by no other motive than of pure business, your suggestion may hold.

Q.—All I wanted to get at is, supposing their action were actuated by business principles, the simplest explanation of their holding aloof and not doing business with a particular man would be that they had some suspicion or some doubt of his solvency ?—*A.*—Holding aloof from business was not the only evidence, but they were doing a great deal more, and therefore I can't accept your suggestions.

Q.—I should like to pass on to another point if I am not keeping you all too long. I am not quite sure that I get you right over this. I think you said that Government officers were in the hands of the Anglo-Indian banks, did you say that ?—*A.*—I did say that at any rate somewhere ?

Q.—You did say ?—*A.*—Yes.

Q.—Now is that a suspicion, or have you definite information ?—*A.*—I had information at the time.

Q.—You had information; now of course one does not ask how a particular person brought the information, but one wants to know generally what was the nature of that information and the nature of the sources from which you got it ?—*A.*—Nature of the sources was some of the letters that were passing between some people.

Q.—Some of the letters ?—*A.*—That were passing between people and some information that people brought to me, people who had every reason to know the real thing.

Q.—Some of the letters which were passing between people; were they letters between the banks and their customers ?—*A.*—Banks and officials.

Q.—Banks and officials, but it seems to me they might have been officials in the capacity of customers, men who borrowed money ?—*A.*—No, they were letters on the question of Indian banking, *i.e.*, how the agitation ought to be kept up and so on. You see I told you that the crisis was brought about. the crisis did not come. Therefore, when I use the word "brought about" then you will understand what I mean by letters from and to banks or information or consultations or articles in the newspapers or proofs or figures, you will understand that.

Q.—Now what I have not quite understood is, and I think what you just now said has not shown what you really mean, when you said that Government officers were in the hands of banks, you don't mean to say as I understand that particular Government officers were indebted to the banks and on that account in the hands of the banks ?—*A.*—No, I beg your pardon, what I meant to convey was that they were being influenced. I should withdraw the words "in the hands" if they mean "in debt."

Q.—The actual interpretation of the words " Government officers were in the hands of the banks " means that they were so much indebted ?—*A.*—No, I should withdraw those words if they meant as you interpret them.

Q.—I need not ask any more questions. You don't mean to suggest that ?—*A.*—I don't mean to suggest that.

Hon'ble Pandit M. M. Malaviya.—*Q.*—When was the People's Bank started ?—*A.*—It was started in 1901.

Q.—How many branches did it have when it was closed ?—*A.*—Nearly 70.

Q.—Can you say roughly what was the capital which this bank dealt with at the time ?—*A.*—The paid-up capital was about 13 lakhs, the reserve was about 6 lakhs and the deposits when the agitation started were about a crore and a half.

Q.—In all the branches ?—*A.*—Yes.

Q.—Can you also tell us how many industrial concerns it helped ?—*A.*—Well about two dozen I should say in a way, but if you like I can work out a list.

Q.—Two dozen in all the branches and the head office ?—*A.*—Of course that business was part of the business, but there were people who in the ordinary course of business borrowed money and did remittance business.

Q.—But the concerns that were helped financially were about two dozen ?—*A.*—Yes.

Q.—Now, did the crisis which happened, or which was brought about as you put it, come in the way in which such crises have come to other banks in other countries ? I mean was there any commercial circumstance, circumstances connected with the money market and the trade which brought about the crisis ?—*A.*—No, it was engineered.

Q.—I take it then that at the time when the bank began to be assailed, there was no commercial crisis which would have brought about its downfall ?—*A.*—No.

Q.—When did the bank begin to be assailed in the *Arya Patrika* ?—*A.*—In January 1918.

Q.—Were many articles written to say that the bank was in a bad way ?—*A.*—Yes. Many articles in that, and later on some articles in the *Civil and Military Gazette.*

Q.—In the *Civil and Military Gazette* also ? How long did this go on ? Did it go on very long before the bank closed ?—*A.*—The bank closed in September, the newspaper agitation had started in January and some agitation privately and by word of mouth had started earlier, and so it took about 10 months or more to kill the bank.

Q.—During all this time when the bank was being assailed, I suppose you must naturally have made every endeavour to keep up the bank ?—*A.*—Yes. Every endeavour possible was made by me and by some of my colleagues to keep up the bank ; when the bank closed some of the colleagues were not with the bank.

Q.—Do you remember when the Specie Bank failed ? Was it before the failure of your bank ?—*A.*—I think it was after.

Q.—This then was the first bank that failed ?—*A.*—This was the first bank that closed its doors.

Q.—Did you apply for or receive any financial help from the Bank of Bengal or the Government to tide over the crisis ?—*A.*—No, we did not apply for and we did not receive any.

Q.—Do you think that if there was a State bank, or a provincial bank, which could have rendered you financial assistance, you would have tided over the difficulty ?—*A.*—I should think so.

Q.—You were the Chairman of the Punjab Provincial Conference which met recently. I find in your address the following statement : " Some semi-officials and officials make out that the Swadeshi banking was a swindle, pure and simple. It was therefore condemned..... It is not perhaps time for me to defend the same with facts and figures, illustrations and examples, documents and proofs. But I may remark that it was nothing of the kind, and so on." Is that a dispassionate statement of the case ?—*A.*—When I wrote it I was actually feeling like that, and I still adhere to it ; I challenge anybody fairly to study the whole thing, and I don't doubt that he will come to no other conclusion but the conclusion to which I have arrived.

Q.—Is it a fact that at the time of the banking crisis the Government of India helped the Bank of Bengal and the other Presidency Banks with money to enable them to help banks that were likely to be affected by the crisis ?—*A.*—That is what I was told.

Q.—I thought it was a well-known fact, not a secret at all, that the Government of India advanced money to the Presidency Banks in order that they should help banks which were in need of money ?—*A.*—Very likely it is a fact.

Q.—You have said in answer to Mr. Maynard that probably the Anglo-Indian banks, which held aloof, or which according to your statement joined the attack upon the People's Bank and other institutions like it, did not at the time foresee the risks which might arise by their doing so. Did not they too come very near the danger, and did not many of them have to apply for help themselves ?—*A.*—Some of them did.

Q.—Some Anglo-Indian banks ?—*A.*—Yes, some of the Anglo-Indian banks also.

Q.—Which were managed by Europeans ?—*A.*—Anglo-Indian is all right.

Q.—Is it within your knowledge, or do you as a matter of fact believe, that some of these banks, European-managed banks also, felt the stress of the crisis ?—*A.*—Yes, they did.

Q.—And do you know or believe that the Presidency Banks did lend a helping hand to some of them ?—*A.*—Yes.

Q.—Is it a fact that if such help were not given some of these banks might have been closed ?—*A.*—Owing to cash difficulties very likely they would have closed.

Q.—Now can you account for the attitude of the Bank of Bengal, their Agent at Calcutta refusing on any business consideration to advance money to the Punjab National Bank on the security of Government Paper ?—*A.*—Well if I was in his place I would not have refused it.

Q.—You have large experience of banking business—Can you suggest any reason which might have led the Agent of the Bank of Bengal to refuse to advance money in those circumstances ?—*A.*—You mean any legitimate reason ?

Q.—Legitimate reason for refusing to advance money not on the security of immoveable property which they would not be able to get properly assessed, or moveable property or personal security, but on the security of Government Paper ?—*A.*—I cannot suggest any business consideration excepting of course one, which I don't believe at all to be the case—that the bank itself might be in difficulties. If I was the Bank of Bengal and I was in difficulties, I would not advance money outside, otherwise I would advance money on Government Paper.

Q.—And if it was the fact that the Government of India helped the bank so that it might help other banks ?—*A.*—Quite so. I do not suggest that is the only reason that will prevent me as a banker or as a businessman from lending money on Government Paper when I had got sufficient funds and I knew that the bank wanted it urgently.

Hon'ble Mr. H. J. Maynard.—*Q.*—This question was put to another witness, the Manager of the Punjab National Bank, before, and I understood him to say that there was not an actual refusal, but they simply sounded the Bank of Bengal whether in certain conditions an advance could be made, and they got from the head office an unfavourable reply; it was not favourable I understood the witness to say ?—*A.*—Is there any difference ?

Hon'ble Pandit M. M. Malaviya.—*Q.*—Did it come to your knowledge, of cours you were most concerned, that the news of the fate which overtook the People's Bank was received with ill-concealed satisfaction in some Anglo-Indian papers in the country ?—*A.*—I know that for a fact there was rejoicing not only in newspapers but elsewhere also.

Q.—On your failure ?—*A.*—Yes, on the day that the People's Bank closed there was a dinner somewhere ! I don't mention the people who attended, one of my friends was present at that dinner—there was great rejoicing. If you want to know more, I can give you the information.

Q.—Was it within the Punjab that this dinner took place ?—*A.*—Within the Punjab, but not at Lahore.

Q.—It is not at all pleasant to go into it, but it is a matter of public interest and we have to put aside delicate considerations. When you say there was a dinner, was it a dinner of Indians or both of Europeans and Indians ?—*A.*—Both were present.

Q.—When you spoke about the Anglo-Indian press, did you mean the Anglo-Indian press of the Punjab alone or outside the Punjab also ?—*A.*— Outside also.

Q.—There was practically jubilation over the failure of the Swadeshi banks ?—*A.*—Yes ; as I said, not only in the press but otherwise also.

Q.—You have already said that.

Sir D. J. Tata.—*Q.*—Do I understand you to say that some dinner took place at which the news was announced, or there was . . . . ?—*A.*—No, it was not given in honour of the failure of the banks.

Hon'ble Pandit M. M. Malaviya.—*Q.*—Some very disinterested people regard want of business knowledge and experience in company promoters, managers and the staff as one of the primary causes of the failure ?—*A.*—You mean business capacity of the company promoters in the Punjab ?

Q.—I am dealing with the People's Bank ?—*A.*—Well, I do not agree with that at all. I think it is the other way round.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Was it a fact that the manager of the bank was also a company promoter ?—*A.*—What do you mean by a company promoter ?

Q.—One who has a personal interest in other banks ?—*A.*—Yes.

Hon'ble Pandit M. M. Malaviya.—*Q.*—Do you think that is an unexceptionable rule ?—*A.*—Well, I think there are two ways of looking at it. One way is this—when the Chinese Loan was negotiated in Europe the lenders said that on the railways and other concerns on which that money was to be spent, there should be representatives of the lenders as directors. That is one view. Another view is that any man who is connected with any bank should not be concerned with the borrowing party. In Germany the whole thing is done or was done by financiers and others who were not only company promoters but railway leaders and great industrialists themselves. In America Mr. Morgan had the same idea, and I think he says in some of his writings that, in the interests of banking, the bank directors should be directors of the concerns to which they lend money. American finance shows that in all those big foreign institutions to which American banks have lent money, American representatives are there ; that is one view which runs in the financial circles.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—May I ask another question ? Suppose you are the managing director of a concern and you are at the same time managing a bank ; do you vote on it or recommend or do you remain silent ?—*A.*—That depends on circumstances.

Q.—But suppose you are concerned in a mill or a cotton gin, and also in a bank ?—*A.*—If I am the managing director of a bank and of a mill, practically my voting does not affect ; that is only a technical thing ; really the man himself arranges it.

Hon'ble Pandit M. M. Malaviya.—*Q.*—I may tell you that this view of yours was supported by the Finance Committee which was appointed in England to promote financial facilities for trade. I find it stated in the Report of that Committee as follows :—" Such an institution could also take a leading part to assist in connection with machinery and overseas business ; in the case of German manufacturers it frequently happens that on the board of the manufacturing company there is a representative of the bank, and there seems little doubt from an examination of the information that is available that the chairmen have exercised . . . . . " etc. ?—*A.*—I might tell you two things before you go further—one is that in all my actions I got my precedent from America or Europe. I did not always work on English precedents. Another thing is that the present day banking ideas of London are no doubt different from the banking ideals of the rest of the world, but they are not very ancient ideals. The modern banking ideas of London are not more ancient than 40 or 45 years at the utmost.

Q.—Is it a fact that the system of banking which is prevalent in England is very different from the system of banking by which manufacturing and business concerns are promoted ? Is that more distinctively the German system ?—*A.*—That used to be the British system also.

Q.—Before the present war began—what would happen after the war is a different story—did London bankers look with suspicion upon a bank which would lend money to industrial concerns which could not repay the money at short intervals ?—*A.*—No, not looked with suspicion, but they would not like to lend money in that way, but confined their business to what they called short paper. That of course became a favourite practice. But there are instances even in England where large industries have been helped by banks. Well, one patent instance is that of the Baring Brothers, who are one of the leading bankers, and they did come to grief at one time when their money was

lent to mines in South America and South Africa. When I was in England as a student the Baring Brothers felt difficulties, and it transpired that though they were in the class of the leading bankers in London they had financed many industrial concerns.

Q.—Do you know of a company which is now at work in India, an English bank which is taking up some other banking institutions with the object, among others of helping industrial concerns ?—*A.*—Yes.

Q.—But on the whole it seems that the Germans went much further in the direction of having banks which would help industrial concerns than our English fellow subjects did before the war ?—*A.*—Well at the present stage I think the Germans did more in this direction but at an earlier stage the Scotch people did a great deal more than the Germans did. Very likely the Germans took their cue from the Scotch banks.

Q.—Let me come to my point. You think then that the want of experience and business capacity in the management, if there was any, was not such as to account for the failure of the banks ?—*A.*—No.

Q.—As you are a student of banking can you give me an idea, roughly, as to how many banks managed by Europeans have failed in this country during the last 100 years ?—*A.*—Perhaps three or four dozens.

Q.—And some of them were very big banks too ?—*A.*—You see banking 50 years ago was not so common all over the world as it is now: therefore those banks which were very big banks in those days may not be very big now.

Q.—Will you also tell me whether the crisis which overtook the People's Bank and its branches was anything of the kind of the commercial and banking crisis in Germany in 1907 or in America about that time ?—*A.*—No, nothing of the kind ; that feature has not been experienced.

Q.—What you say points to the conclusion that if there had been a State Bank to lend a helping hand to your institution when there was a run upon it, you would have been able to tide over the difficulty ?—*A.*—Well you are quite right, but why a State Bank, if any bank had come to our assistance in money, not a very large loan, then of course we would have tided over, whether it was a State Bank or any bank.

Q.—Do you know that whenever there has been a commercial crisis like that, banks in London and banks in America have combined their resources and their credit in order to help other institutions to get over their difficulties ?—*A.*—Yes, when there is a general crisis they do ; but in this case there was not even a general crisis: the thing was easier to manage.

Q.—You have said that some of the banks have paid 16 annas in the rupee. Could you name any ?—*A.*—Yes, the Marwar Bank has already paid 16 annas.

Q.—Is not the Punjab Co-operative Bank also one ?—*A.*—The Punjab Co-operative has very nearly paid 16 annas, not quite fully paid it, a little amount remains over.

(Here the Hon'ble Sir R. N. Mookerjee handed to Pandit M. M. Malaviya a copy of the latest liquidator's report.)

Q.—I find it stated that the Doaba Bank has paid 12 annas and has to pay a lakh and 90,000 in full settlement now ?—*A.*—Very likely that is correct.

Q.—The Marwar Bank too has paid 16 annas ?—*A.*—Yes and something is left over for share-holders also.

Q.—And the Lahore Bank, Limited ?—*A.*—I do not know exactly, I do not know the figures, but I do know that some have already paid 16 annas; without exception every bank would have paid or would pay 16 annas if they had not been very crudely and rudely and mercilessly handled.

Q.—Now do you ascribe this attitude which you describe by these epithets to any general feeling of antipathy among the banks and the officials here ?—*A.*—Yes, they started with that antipathy, and they began to disregard the share-holders.

Q.—They started with the idea. . . . ?—*A.*—They started with an unsympathetic attitude.

Q.—Has that attitude had any great effect in the matter of liquidation too ?—*A.*—A great deal of effect.

Q.—Do you imply that the interests of the share-holders would have been better served if there was an attitude of a dispassionate consideration of the facts ?—*A.*—Yes, not only that, but I believe that all the banks could be restarted, all of them perhaps

excepting here and there a small tiny little thing—all the banks could have been restarted if the attitude on the liquidation side had been a little more considerate, not even favourable but considerate.

Q.—Do you think it possible now with the facts which have been established and which show that these banks were not brought to the pass to which they were owing to any inherent defects of their own, but owing to other circumstances, do you think it possible now by any help which Government might give to revive these banks ?—*A.*—Well, yes, some of them could be revived; for example the Co-operative Bank could be revived any time, it is only a matter of 5 lakhs of rupees for which they are sticking. If 5 lakhs were forthcoming it could re-start at once even though it is crushed, the People's Bank could be re-started also with a little assistance ; and I have been asking my friend Rai Bahadur Ganga Ram to re-start the Marwar Bank, but he does not listen to me; he does not want that it should be re-started ; and other banks also in the same manner.

Q.—In view of the great injury which has been inflicted on a large number of people by the closing up of these banks, and in view of the evident need for banking facilities for trade and commerce, do you think that if the Government helped to revive two or three banks there will be a general feeling of returning confidence created in the province ?—*A.*—Yes, certainly, that would help more than the starting of new banks. If some of them were revived, that will bring confidence earlier and more rapidly than by starting new banks.

Hon'ble Sir R. N. Mookerjee.—*Q.*—What do you mean by the little Government help, what sort of help ?—*A.*—I mean cash, cash deposit on security for some time.

Q.—Only by way of deposit ?—*A.*—Yes ; only by way of deposit secured on mortgage , Government can take a mortgage on the assets if it likes.

Q.—You don't mean that Government should take shares ?—*A.*—No, there are assets, sufficient assets, and if the Government secures these and gives money, so that the depositors would be paid, the banks could re-start, and very likely some of the depositors would not take back their money under the circumstances.

Q.—And Government by doing so would not be taking much risk ?—*A.*—No ; one sees no risk in this.

Q.—What security will it have ?—*A.*—Immoveable property in most cases. In most cases you will find there were large reserves also in addition to share-holders' capital. For example, take the Co-operative Bank as an illustration. The Co-operative Bank owes 5 lakhs of rupees to the depositors and has assets of about 22 lakhs. Government can take up 10 lakhs worth of securities as security to lend 5 lakhs, Government runs no risk whatsoever ; the bank can be re-started ; very likely the deposits would come back before a year or 18 months, that is the whole risk.

Hon'ble Pandit M. M. Malaviya.—.—Is the absence of banking facilities to which you refer in your written note, really seriously hampering trade in this province ?—*A.*—Not the least doubt about it, and especially in these difficult times, war times, if banking had existed, both the public and the Government would have been assisted to a very large extent.

Q.—Both the Government and the public ?—*A.*—Yes.

Q.—What would you suggest as a practical means of putting this matter before the Government ? Would some of you gentlemen who have experience and business knowledge sit together, formulate proposals and submit them to Government for their consideration ?—*A.*—If we felt that the attitude of Government would be favourable.

Q.—Let us start with the assumption that it will be ?—*A.*—That may be your assumption, it has not been mine up to now, I might change my opinion to-morrow.

Q.—Assuming that the Government will be willing to consider proposals, do you think . . . . . ?—*A.*—I think workable schemes can be forthcoming in no time.

Q.—Which will bear scrutiny ?—*A.*—Yes ; on business lines.

Q.—You suggest the development of co-operative banks ?—*A.*—I mean the existing co-operative banks.

Q.—Yes ; you suggest their development ? You say they should be strengthened, extended, improved and localised; what do you mean by localised ?—*A.*—What I mean is that they ought to be worked more or less not on one line but according to local conditions, that is one thing ; and the other thing is that the vernacular ought to be the predominant feature.

Q.—You mean their business should be carried on in the vernacular ?—*A.*—Yes; and if there are any local requirements and tendencies and so on, they ought to be studied and encouraged, that is what I mean by localising.

Q.—Subject to the supervision of the Inspector, you would also have the management of these banks conducted more and more by the men of the locality ?—*A.*—Yes, quite so.

Q.—You think that that will inspire confidence and facilitate the growth of co-operative banks ?—*A.*—Yes, certainly if they are in the right hands.

Q.—You have spoken in support of the idea of an industrial bank ?—*A.*—In a general way.

Q.—In view of the great need for industrial development, particularly after the war, and in view of the fact that besides our English fellow-subjects, other nations, say, the Japanese, the Americans, are flooding this country with their imports, do you think that the need of industrial banks is paramount ?—*A.*—Yes, and I say further that there is need not only for industrial but for agricultural banks and all kinds of banks, I have said that.

Q.—I am asking you particularly about an industrial bank ?—*A.*—Oh yes, an industrial bank is very urgently required.

Q.—Would you recommend that it should be worked on the lines of the Japanese and German banks ?—*A.*—When I was answering Sir Fazulbhoy, I said I have not devised any scheme at present.

Q.—You recommended a board on the lines of City Improvement Trusts—a Technical Education Board. Would you have such a board in the capital of the province for the whole of the province, or would you have it in more than one place in the province ?—*A.*—I should have one at present in the capital to start with. Of course in certain places there might be a special board required where industrial development is likely to go faster than at other places, but at present I should be quite satisfied with provincial boards.

Q.—And the sphere of their influence will be the whole of the province ?—*A.*—Yes.

Q.—What are the facilities which exist at present in your province for promoting technical and industrial education, apart from the Hindu Jubilee Technical Institute ?—*A.*—I think that is all. There are some railway workshops of course.

Q.—Apart from these two ?—*A.*—There is nothing else.

Q.—Is there no other institution in this province to impart technical and industrial education ?—*A.*—I am not aware of that. Perhaps the Salvation Army may have got something, but I am not aware.

Q.—Considering the natural resources of your province and the capacity of your people to take part in the development of industries, do you think that there is a great need for a higher technical school or technological institute in this province ? Take for instance the chemical industries and the cotton industries ?—*A.*—You see that this is a hypothetical question. Unfortunately the difficulty is that supposing the men are trained, where is the money to come from for industries. But granting that labour would be forthcoming and that capital would be forthcoming, I would certainly reply, yes ; but if the other conditions are wanting, mere technical educational institutions won't do much, except train up Punjabis to take service elsewhere.

Q.—I appreciate the importance of your point ?—*A.*—Very well, granting capital and labour and raw material, certainly I would recommend it.

Q.—Is it not a fact that many Punjabi young men go out to foreign countries for education ?—*A.*—They do.

Q.—Are they taking to industrial and technical education or do they largely go to the Bar ?—*A.*—They used to go up to about 6 or 7 years ago exclusively for the Bar and Medicine ; but now a fair proportion go for technical and industrial pursuits.

Q.—Do you think if there was a technical college imparting industrial education, training mechanical engineers and electrical engineers, etc., it will be popular ?—*A.*—It won't lack students, its benches will be full, but where will the men get employment ?

Q.—That will depend upon banking facilities being promoted ?—*A.*—Yes, of course the rooms will be full.

Q.—You have recommended a college of commerce ?—*A.*—At a certain stage I have said in the movement for industries that would come about, then a commercial college would be needed.

Q.—Commercial and industrial movements ought to go together ?—*A.*—Certainly, but then that stage is not guaranteed ; if you guarantee that stage I say at once a commercial college is required.

Q.—I want to know whether in your opinion this province needs a college of commerce in addition to a technical college, in order to train its youths for commercial undertakings and in order to develop the industries of the province. I want to know whether there is a need for both of these ?—*A.*—The other conditions guaranteed, the answer is naturally yes.

Q.—You say here, the transport facilities of the North-Western Railway do matter a great deal; do you want any other railway line competing with it or what ?—*A.*—That would not be a bad thing in some cases, but my idea seems to be that canals ought to be developed also for transport purposes.

Q.—You think that canals can be adapted for the purposes of trade and industry ? Do you mean new canals should be created or that existing ones should be adapted, for this purpose ?—*A.*—I am not an expert, but I think existing canals could be adapted to transport work also.

Q.—But you think that canals should be more largely utilised than they are at present ?—*A.*—Yes, for transport purposes also.

Q.—With reference to what you have said regarding railway freights, would your object be gained if on the Railway Board there were non-official representatives of Indian trade ?—*A.*—Doing what ?

Q.—Representing the Indian point of view ?—*A.*—If they are concerned with the freight, then this thing would be done; but if they are concerned with something else, then they will be like the Member for Commerce and Industries, that has been created: I think that he is expensive, his time is spent in looking after post office, telegraph system and so on and does not do much for the trade, that is my impression; you may have two or three non-officials on the Railway Board, half a dozen if you like if they are going to inspect sites and stations, then they won't do freight work.

Q.—I am speaking with reference to the question of freight, the removal of inequalities of freight of which you have complained ?—*A.*— Quite so, I want an organisation, whether it should be part of the Railway Board or whether it should be a separate entity, that does not matter to me, but I want an organisation which will look after that part of the business.

Witness No. 375.

Mr. H. Calvert, I.C.S. *Registrar, Co-operative Societies, and Joint Stock Companies, Punjab.*

Written evidence.

Introductory.

In the Commission desire to have any points supported by actual instances, I should be obliged if I could be informed in time. If for instance the Commission desire evidence supporting the view that the collapse of companies in 1913 was really due to unsound business methods and bad finance, it will be necessary to select clear cases.

I may add here that I am in favour of a new Act for small companies, something on the lines of the English Industrial and Provident Societies Act. The main features would be limitation on the holding of a single individual, limitation of the dividend; control by the Registrar or other authority and concessions by Government to encourage industries. These small concerns would thus be in financial leading strings, they could secure independence at any time or after a stated time by registering under the Companies Act, upon which they would lose all concessions.

Experience of this office shows that shareholders display marked apathy and seldom attend meetings; one reason for this seems to be the practice of the Directors or of the Managing Directors of securing sufficient proxies to control the meeting, so that individual share-holders are deprived of all power. The Directorate falls into the hands of a small circle and the interests of the shareholders are sacrificed. The Directors try to pay big dividends by (*a*) omitting allowance for depreciation, (*b*) appreciating the value of property, (*c*) omitting to spend adequate sums on repairs and maintenance and (*d*) omitting to make reserve for bad debts, etc. A company run on these lines is going into liquidation from the day it starts.

Financial aid to industrial enterprises.

Capital.

1. I speak from the records filed with me. From these it appears that the system of reserve liability does not work satisfactorily. The shares are frequently so small that

the danger of loss does not excite any interest ; while the sum uncalled is too small to sue for in a Civil Court. The costs of a suit for a small call would exceed the sum involved. In liquidation proceedings, liquidators seem unable to call up this reserve liability which is therefore useless.

I would feel inclined to divide companies into two classes under two laws ; those that come under the existing law should be compelled to have a minimum paid-up capital of, say, Rs. 50 or Rs. 100 per share.

The other class should be small concerns which may have small shares, but the whole of the share capital must be paid up *or* for all there might be a minimum paid-up capital per share which might be fixed at Rs. 50. The idea is to give each shareholder a substantial stake in the company which is not provided by shares of Rs. 5 each, of which Rs. 2 is paid up.

2. Punjab indigenous companies seem to raise capital not so much by appeals to the public as by touting among friends and acquaintances.

The shareholders are usually pleaders, contractors, Government servants and small merchants. The majority seem to be Hindus and of these again the majority seem to be of the Khatri caste. As a body, the zamindar has not been attracted into subscribing capital.

Witness here gave confidential evidence.

Government assistance.

There can be no money aid from Government without strict Government control. The joint stock concerns under Indians in the Punjab seem to be run on thoroughly unbusinesslike lines. The one idea seems to be to pay high dividends, whether earned or not. Depreciation is practically never provided to the extent which a well-managed concern would consider adequate and there is seldom anything put to reserve. The expenditure on repairs seems to be insufficient—it may be even lower than ½ per cent. on the capital value. If full allowance were made for depreciation, reserve and repairs, then I doubt if any existing indigenous company in the Punjab would ever pay a regular dividend. Such being the case it is obviously undesirable that Government should grant financial aid without strict control.

Under certain safeguards I would feel inclined to favour such aid under control.

There would have to be some assurance that the manager was qualified for his post, and that the capital was expended honestly and economically on buildings, machinery and plant. The dividend would be strictly limited to, say, 6 per cent. for a period of years, and anything earned above this (after allowing for depreciation, insurance, etc.,) would have to be separately invested as a reserve against loss.

It might be possible to devise a co-partnership arrangement whereby the capital contributed by the Government received only interest, capital publicly subscribed in the first place receiving the same, and all further profits being divided over public capital and the workers. I am inclined to think that a share in the profits would stimulate the employees to better work.

Certain minor industries could most suitably be fostered by loans with or without interest, provided there rested with the Registrar or Director of Industries power to liquidate for good reason. The application of oil-engines to replace hand-power might be fostered in this way.

The requirements of Government departments, such as the Army, might be used as a bait to encourage enterprise, but I deprecate this constant intrusion of the idea that the industrial development depends on Government action.

6. The control of Government might take various forms. For instance, the appointment and dismissal of the manager might be subject to Government approval. The Registrar of Joint Stock Companies or other authority might be empowered to veto or curtail the dividend until certain requirements as to depreciation, insurance, etc., were fulfilled.

Government under section 138, Indian Companies Act, can already appoint Inspectors but cannot insist on any action being taken on their reports. Where in the opinion of the Registrar or other authority, proper action is not promptly taken, it should be possible for the authority to apply to the court to place the company in liquidation.

Pioneer factories.

I favour the idea of pioneer factories but the factories should of course be small.

The objects should be not only to show that the industry is commercially profitable, but to teach the staff to comprehend the essentials of success.

Where such a factory has proved successful, I would advocate a co-partnership arrangement whereby the workers could gradually take it over. It must be remembered that the industrial classes are not the same as the commercial class, and it seems to me that one factor in the Punjab failures was that the commercial class took over industrial concerns about which they possessed inadequate knowledge.

Government desires to see industries, the commercial class wants to see big profits, and the two views are not always compatible. It should not be too hastily assumed that pioneer factories will be taken over by capitalists, more success would probably attend efforts to hand them over to members of the industrial classes.

Financing agencies.

10. It must be remembered that the Punjab is not commercially organised. We have no proper banking system ; quite valuable property may be useless as security as it is not readily saleable. The idea of requiring full security of a readily realizable kind for every loan is not acceptable. It seems to be the opinion of many that a bank exists to help others, and that the others have a grievance if the bank insists on safeguards.

It is a commonplace to say that a litigant's troubles begin when he has got his decree ; which merely means that he had not obtained proper security. The results of execution proceedings show to what an extent this failure to insist on proper security prevails. Whatever else, there must be security, not only adequate in amount but of a readily realizable kind, *e.g.*, a share in a jointly owned house may be of value, but the value cannot be easily realised and so the share is not a good security.

The long liquidation proceedings of the various Punjab banks indicate that these institutions failed to insist on proper security. I believe existing banking institutions will lend aid if adequate security of a proper kind is forthcoming. As Registrar of Joint Stock Companies I have gathered the impression that very large sums were advanced on quite inadequate and unsuitable security. These sums were advanced to companies which neglected vital business principles and collapse was merely a matter of time.

Banking law.

10. (*a*) I think a strict banking law is needed. I should enforce stringent conditions on all concerns dealing with the money of the public. It should fix limits on the proportion of capital which can be loaned for periods exceeding six months, on various classes of securities. It should limit dividends until reserves are built up and should insist upon an adequate reserve ; and power should be given to the Registrar or other authority to apply to the court for liquidation in case of failure to observe these conditions. True credit demands confidence and the strictest adherence to sound rules. It should be illegal to advance money without provision for amortization. It should be illegal for Directors either as persons or as firms to borrow from their own bank and it should be illegal for the bank to advance money to other concerns under the control of their Directors. The system of one man borrowing from and lending to himself in various capacities has been tried in the Punjab and has proved disastrous.

If the Punjab is to have banks in the proportion existing in Europe, we shall require about 4,000 banks and branches. Even allowing for the minor importance of industry, we should require 1,000 ; and it is obvious that these banks and branches should be fostered on the soundest business lines ; it would be a grave error to sacrifice security to speed.

Co-operative societies.

12. Co-operative societies should be encouraged —

(*a*) for dealing with agricultural produce, *e.g.*, rice-hulling and making preparations of rice ; wheat-grinding for flour and preparations thereof ; rope making or dealing with other fibres, oil-pressing, cotton-ginning, wool-scouring, silk-winding ;

(*b*) for introducing extra power (*e.g.*, oil engines) into village industries such as an engine-driven lathe for carpentry and wood-work ; improved machinery for iron workers, small cotton-spinning and weaving machines ;

(*c*) for introducing new industries connected with agriculture such as the manufactures of glazing materials from the white of eggs, if investigation showed this to be feasible.

The co-partnership organisation would probably prove the most successful, the capitalist (or the State) receiving interest on capital and the workers a wage and all profits being divided between these. Where the workers were able to borrow, a pure co-operative organisation might serve but pure co-operation has not succeeded in industry.

Surveys for industrial purposes.

25. I think detailed and elaborate enquiry is necessary —

(1) to discover whether more profitable use could not be made of existing products ;

(2) to discover whether use could be made of products now regarded as useless, *e.g.*, wild plants like the hemp (for hyoscene) or products at present wasted. *e.g.*, wheat husks and straw for cardboard, etc. ;

(3) to discover whether there are not crops or plants that could be grown profitably in India but have not been grown because there is no market for them in India. For instance, could not potato cultivation be extended so as to supply all the starch and cheap spirit at present imported ? Could not a good saponifying oil be produced.

We want also to turn skins to greater value and prevent the waste involved in the present system of exporting uncured skins.

III.—Assistance in marketing products.

I think the whole question of marketing products requires careful and thorough investigation. There seems to be an organised system for marketing wheat but none for marketing rice, fruit, fish and minor products.

It is a very large subject. The minor industries such as poultry farming, *ghee* making, etc., are open to great development if proper methods of marketing can be organised. It seems to me that much preliminary work could be got through if Government offered substantial rewards for monographs dealing with this subject and if the Colleges and Universities took these up as subjects in economics.

In this connection the question of railway rates crops up and the hopeless intricacy of the present tariff must be taken into consideration.

VI.—General official administration and organisation.

57. The Punjab is essentially an agricultural province, poor in minerals and peculiarly void of any considerable through trade. A land-locked province in a corner has limited opportunities for commerce. It therefore seems to me that any development on the industrial side must depend on the progress of agriculture. The industries must be largely concerned with the products of the soil so that they cannot be severed from agriculture. I favour a Board. The President should be a Development Commissioner of rank not less than that of Financial Commissioner, and his whole time should be devoted to the work of this Board. Directly under him would be Directors or Registrars for—

(1) Agriculture (*i.e.*, production),

(2) Co-operation,

(3) Veterinary work,

(4) Industries and Companies, Factories,

(5) Fisheries,

(6) Forests,

and there should be also either a Senior Secretary or a Personal Assistant of senior rank who would act as liaison officer between this Board and the Irrigation Department and the Railway so far as their activities affect agriculture and industries.

In the Punjab this would mean little more than a third Financial Commissioner who could devote his whole time to the development of the Province. He would have to be a senior officer in close touch with the Lieutenant-Governor and as free as possible from interference from the Secretariat. This latter suggestion is solely intended to ensure expeditious disposal of business, as projects would be subjected to full examination and criticism by the Board before submission to Government. The Board would be given annually funds sufficient to meet current needs of administration plus expansion and development. The Financial Department should have no control over the expenditure of funds once allotted to the Board.

60. The question as to whether the Director of Industries should be a businessman or not, depends on the duties to be allotted. For instance the duties of Registrar, Joint Stock Companies and Insurance Societies, must be performed by some one, and as they are not sufficient to occupy the whole time of one official they must be added to the duties of another official. I would rather allot them to the Director of Industries who should be a non-expert official with expert assistants. Qua Director of Industries.

The ordinary businessman could hardly be expected to be master of every industry ; he would be difficult to get and to replace (*e.g.*, in a leave vacancy) and as the usual avenue for promotion would be absent, he would be constantly trying to secure a better post.

A Civilian Director would be better able to dispose of the administrative work and to prepare schemes in forms likely to secure approval of the Board ; he would deal with Joint Stock Companies, and would have under him Inspectors of Factories, Boilers, etc., and experts in particular industries. He would probably form a small non-official Committee for advisory purposes.

The only alternative that would work would be two Directors of Industries, one technical and the other non-technical for companies, factories, boilers and administrative work.

I venture to express my belief that industries will not develop in this Province unless they are made the sole care of an officer or Board.

IX.—Other forms of Government action and organization.

Railway rates.

98. The North-Western Railway goods tariff seems to me to be unnecessarily intricate. It is certainly beyond the power of the average layman to understand.

I understand the rates adversely affect the development of certain industries, *e.g.*, it would probably be of benefit to this Province if it could export flour instead of wheat, and oil instead of oil-seeds ; but I am informed that the rates for wheat, oil-seeds, etc., to Karachi are so much lower than the rates for flour, oil, etc., that they have the effect of a bounty on the export of the raw product.

Ordinarily the cost of transport of manufactured goods from the sea port to the Punjab should serve to protect local industries against foreign competition and the extent and influence of this protection requires investigation. I may add that the prevalence of dishonesty amongst the Railway staff acts as a direct tax on trade and commerce. Last year over 200 Railway employees were convicted of theft, and there were probably other cases in which guilt was not brought home.

ORAL EVIDENCE, 13TH DECEMBER 1917.

Hon'ble Sir R. N. Mookerjee.—*Q.*—You say, " Experience of this office shows that shareholders display marked apathy, and seldom attend meetings." Is it not a sign of a good management. When companies are well-managed, shareholders hardly take any notice ; it is only when the company is not well-managed that they take notice and attend the meetings and make complaints ?—*A.*—I don't agree with that at all. The shareholders show no interest because they are not allowed a voice in the management.

Q.—The articles of Association give them a voice. ?—*A.*—They are powerless.

Q.—All companies must be registered under the present Companies Act, and that Act gives shareholders very great power if they only exercise that power ?—*A.*—The shareholders are all more or less arranged in rings. The managing directors arrange for rings, arrange to get proxies in that ring to overrule any shareholder who comes to ask questions.

Q.—Do you think any Act can prevent that ? If I don't take an interest in my own affairs, what Act can make me do it ?—*A.*—As I have said in my written evidence the practice of securing sufficient proxies to control the meeting deprives shareholders of all power. There should be two classes of companies, those with a minimum paid-up capital of Rs. 50 or Rs. 100 per share, and the other for small shareholders with the whole of the share capital paid up, or a minimum paid-up capital of Rs. 50 per share. This would give the shareholders a substantial stake in the company which is not provided by shares of Rs. 5.

Q.—I believe you are aware that most of the coal companies have Rs. 10 shares. You cannot prevent a man from taking one share, or 5 shares. How can you bring that in, and especially if the object is to encourage small people to take an interest in the development of industries. The face value of shares must be very low, otherwise they cannot come in ?—*A.*—I don't understand the point. The idea of limited liability surely is to allow fairly well-to-do people to combine their capital ; it is not necessarily to allow small people to come in with Rs. 2 and Rs. 10 shares.

Q. When a promoter makes a limited company he knows the best way to promote that company. Practically almost all the coal companies have Rs. 10 shares. They are well-managed companies, most of them pay very good dividend. The face value of the share is only Rs. 10. No Act can prevent a man from buying one share, and if he buys one share, all that he has to pay is Rs. 10. How does this recommendation of yours

act ? You cannot make an Act that the minimum face value of the shares should be Rs. 100 ?—*A.*—I state a fact here, that " experience of this office shows that shareholders display marked apathy, and seldom attend meetings." I state that as a fact ; that is not my opinion ; that is the actual fact.

Q.—There are many companies with which I am connected, where we cannot get the shareholders to come to the meetings : if they know that they are going to get 7 or 8 per cent. dividend, they don't want to bother ?—*A.*—I am only stating facts.

Q.—It won't appeal to the public that way. We find in Bengal that whenever a company is not paying, or is being mismanaged, then the shareholders begin to take an interest and exercise their right. When the company is well-managed, nobody bothers ?—*A.*—These shareholders here don't even attend meetings when the company is in a bad way.

Q.—You must educate people ; that is the only remedy. No matter how stringent the Act is, you cannot get a man to come to the meetings. If I am satisfied with investing my money in certain concerns and don't take an interest in it afterwards, no Act will make me do so ?—*A.*—I merely state the facts. You seem to object to a statement of facts.

Q.—That is a universal fact : in other Provinces people don't suffer from what you say ?—*A.*—My impression of Lancashire is that shareholders took a very keen interest in everything.

Q.—In answer to question 6, you say, " The control of Government might take various forms," and you cite the different forms. You mean only in cases where Government helps an industry, not otherwise. That is you don't mean that in every company registered under the Companies Act, Government should take control ?—*A.*—That is in the case of a Government-aided industry.

Sir F. H. Stewart.—*Q.*—How long have you held this appointment of Registrar of Co-operative Societies ?—*A.*—Since April 1916, 18 months ago.

Q.—You refer to the English Industrial and Provident Societies Act. Can you give me very shortly the main lines ?—*A.*—The English Industrial and Provident Societies Act is an Act specially intended for small concerns. No person is allowed to hold more than £200 interest, either as a deposit or as capital, and it is subject to certain control by the Registrar. He has the power of inspection, and also of liquidation.

Q.—And limitation of dividend, or to veto the dividend ?—*A.*—Yes, he has very full powers of inspection.

Q.—Do you think that would prove feasible out here ?—*A.*—If you are going to have these small companies you must have them more under control. You must have two types ; one type who know their business, and those who don't. The type you wish to bring up must be under the Board's supervision.

Q.—You think that would train shareholders to take an interest in their own affairs ?—*A.*—Yes ; you have to teach shareholders that they are really responsible.

Q.—You would like to see these two forms of companies introduced, quite irrespective of Government aid ?—*A.*—If you are going to have any industries at all in the Punjab, run by Indians, you must have them under control. I have said that they should register under the Companies Act.

Q.—You use the word " apathy " ; is it not rather " ignorance " ? They are not apathetic about their money, even if it is a small amount ?—*A.*—They don't attend meetings. Most of the meetings here are attended by Harkishen Lal alone.

Q.—Then you refer to Directors paying too big dividends : is this not partly at any rate a matter for the auditors ?—*A.*—An auditor has no power over the dividend ; all he can do is to comment on irregularities.

Q.—He can and should state in his certificate that sufficient allowance has not been made for depreciation, etc. ?—*A.*—He is not allowed to fix depreciation.

Q.—Is it not the auditor's duty to point it out if the affairs of the company are being conducted on an unbusinesslike basis ?—*A.*—A large number of auditors in their reports put in a separate report, saying : " We don't think that sufficient allowance has been made for depreciation."

Q.—Hitherto in the Punjab that has not been done ; auditing has not been sufficiently careful ?—*A.*—Prior to the Act it was absurd : we received balance sheets which did not balance.

Q.—Have you since then seen a marked improvement ?—*A.*—Yes, they are working fairly well : now they are beginning to insist upon depreciation.

Q.—With the result that public confidence is returning ?—*A.*—It cannot return unless we have got rid of these liquidating companies. Until that takes place, I don't see how you can begin again.

Q.—With reference to the question of Government financial aid, you say : "There can be no money aid from Government without strict Government control." The evidence we have had, both from officials and non-officials, shows that there should be Government control, but not excessive. It might take the form of audit, inspection of accounts, and possibly the appointment of Directors, with equal powers to the rest of the Board. You want something more than that ?—*A.*—I have suggested two things ; one is that we should have the power to veto and curtail the dividend, and the second is co-partnership. Government should advance the capital and be a sort of co-partner, and be gradually bought out.

Q.—Is it not a question whether you are going to destroy business initiative and the interest of the management and private shareholders in the concern ; whereas you want rather to develop it ?—*A.*—You have to build up from the very beginning.

Q.—You think that industrial concerns must be kept in leading strings for some time ?—*A.*—I have taken the point further. There has been, I think, a confusion between what you might call the commercial class and the industrial class. What you have had in the Punjab is the commercial class. You must work up from the industrial class, as they do in Lancashire. The spinning mills were run by the weavers themselves. They were not run by banks or money-lenders.

Q.—What you aim at seeing here is a similar growth, beginning from entirely fresh beginnings ?—*A.*—Start with the industrial classes ; train them more and gradually build up from them.

Q.—With regard to the question of banking law, you think a strict banking law is needed for the purposes you indicate ?—*A.*—I think so.

Q.—Would it also deal with the employment of the name 'bank,' or the term 'banker' : that is rather a vexed point. It has been put to us that ignorant or apathetic shareholders are apt to be deceived by the misuse of the name 'bank.' Would you also include provision in your suggested Act dealing with that point ?—*A.*—You would have to define the application of the Act, wouldn't you ?

Q.—Could you give a definition that would meet the case ?—*A.*—The legal definition of a bank is one that receives deposits from the public and pays them out on cheques. In this case you might say "who takes deposits from the public and re-pays them on demand."

Q.—Would your Act provide for the proportion of capital which was to be paid up ?—*A.*—I should put a very high minimum. We have had banks with paid-up capital of Rs. 300 and 400, which was absurd.

Q.—And what proportion of the subscribed capital ?—*A.*—Nothing at all. Fifteen lakhs nominal and Rs. 400 paid-up. I don't think limited liability was ever intended to take cases like that of Rs. 400 paid-up capital.

Q.—You say the President of your Development Commission should rank not below the Financial Commissioner. He takes the place of the Board of Revenue in Bengal, does he not ?—*A.*—Yes, my idea is that the Development Commissioner should have almost overwhelming authority, and should not be subject to criticism.

Q.—Then you suggest that under him there should be these different Directors. Would you have sufficient work for them ; the Director of Fisheries, for instance ?—*A.*—There is enormous work in the Punjab. We have a Warden of Fisheries now. There is also tremendous scope for Veterinary work. There is a Chief Superintendent under the Director of Agriculture.

Q.—Then you have got your Financial Commissioner at the top ; then the Director ; and in the case of industries you would like to see a small non-official Advisory Committee ?—*A.*—If you have an official head, you must have technical advisers.

Q.—Are you not putting your Advisory Board rather low in the scale, subject, first, to the Commissioner, then to the Director ? It is no use your having an Advisory Committee unless it is composed of the best businessmen in the Province. Do you think they would be willing to serve in such a subordinate capacity ?—*A.*—I don't think they would object.

Q.—Would this be a Standing Committee, or just be consulted from time to time ?—*A.*—I have not gone into such details. I would propose a Standing Committee.

Q.—Would such an organisation as you suggest be able to devote sufficient care and attention to village and cottage industries ?—*A.*—I think so. You have got co-operation and industries. Those two between them would be able to take up cottage industries. They are partly under me on the co-operation side, and partly under the Director of Industries.

Q.—You would be a member yourself of the Development Board as Registrar of Co-operative Societies ?—*A.*—Yes . The idea is that our training as officials does not teach us to spend. We are taught to control and collect. We are not expert spenders. What we need is a man who would be an expert spender. His whole idea would be to spend.

Q.—This Board would have its budget ?—*A.*—It would have its allotment. All the allotments would be collected together and handed over to the Development Commissioner.

Q.—Would you give it a free-hand in the spending of allotments ?—*A.*—Once the budget was passed, the Development Commissioner would have absolute power.

Q.—In the case of disagreement, he would have power to decide without further reference ?—*A.*—Yes.

Q.—I don't quite understand your suggestion about railway rates. Do you want to see a committee that would meet from time to time, and go into railway rates generally ?—*A.*—I don't know what the present North-Western Railway rates are based upon ; but they are certainly not designed to help on the work of the Province. I think they are designed for some ulterior motive. If you want to ascertain the cost of a wagon, you have to consult six volumes. The railway people themselves cannot make head or tail of their own rates.

Q.—Do you want to see pressure brought to bear on railways to adjust their own rates more equitably ; or do you want to see some central authority dealing with the question of rates ?—*A.*—I think the North-Western Railway should be brought under the Local Government ; it should be considered as part of the economic development of the Province.

Q.—Would you like to see this Development Board consulted in this matter ?—*A.*—I have suggested that there should be a liaison officer between the Board and the Irrigation Department and Railway, who would be able to consult the Railway freely.

Q.—How many co-operative societies have you ?—*A.*—About 3,500 ; they are mostly agricultural.

Q.—Do they assist in marketing produce ?—*A.*—We are just experimenting with marketing.

Q.—Do you find the members of those societies capable of running their own affairs ?—*A.*—We have some societies which are run entirely by their own committees, and run very well ; but the majority need a great deal of assistance yet.

Q.—Do the societies of weavers require special assistance ?—*A.*—At present, yes.

Q.—Are they developing ?—*A.*—The weaving societies have practically come to an end, owing to the fact that we cannot get dyes. The weavers are getting such heavy wages to go to Mesopotamia that they are ceasing to weave and taking to other work. That is mostly owing to the war. The weavers are a very backward class. The Punjab carpenters are very progressive. We have no societies among them yet.

Q.—What is the procedure about starting a society : do you give the initiative ?—*A.*—We have a staff of inspectors paid by Government, and sub-inspectors paid by the societies. Each society contributes to a fund from which sub-inspectors are paid. Government has agreed to bear the cost of sub-inspectors to open up new areas.

Q.—If they think the locality was suitable for a society, do they get hold of the people and try to start a society ?—*A.*—We decide where to go, and send sub-inspectors there to start.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—I suppose all your experience is in the Punjab only ?—*A.*—Yes.

Q.—Referring to these failures of companies and banks, was not this the first effort of the Punjab in having industries started ? In the case of all these companies which started, was not this the first industrial attempt ?—*A.*—I don't think so.

Q.—Were industries first started even before 1900 ?—*A.*—I think there were companies in existence prior to that. I should not like to be absolutely certain. Are you referring to indigenous companies ?

Q.—Yes, banks and other registered companies ?—*A.*—The Punjab National Bank came into existence in 1894.

Q.—But generally this impetus dates from 1900, when the People's Bank was first started ?—*A.*—We may say it expanded from then.

Q.—But there were only one or two banks, and not many indigenous companies before 1900 ?—*A.*—You mean as limited liability companies ? I could not tell you.

Q.—With your experience of this beginning, you want to have all these regulations and safeguards ?—*A.*—We wish to save the Province from a repetition of the *debacle.*

Q.—With reference to the experience of the defects you have found out, does not that happen all over the world ? In England thousands of banks have failed ?—*A.*—The English system is built up on the unlimited liability system. Limited liability was only introduced into England with the advent of railways.

Q.—I think in the beginning of any industry in any country, there are bound to be failures and experience has to be gained before attaining success. In Bombay we have also had failures. The big English commercial houses were not founded on limited liability, but on unlimited liability. After our first failure we have now revived and are on a sound basis in Bombay. We have got our experience and now safeguard our money. But in the beginning everyone has failures ; there is no question about it. To get experience you have to pay something, and you want to safeguard entirely against people getting that experience so that there may not be a repetition of failures and you want Government control over everything, so as not to give people who have had previous lessons a free hand ?—*A.*—I would not put it that way at all. We have got to recollect that, prior to 1854, in England, all big industrial concerns were of unlimited liability, and in the course of the last 60 years, a very complicated system of company law has been built up, which is exceedingly rigid. Out here we began with the Companies Act which was very slight. That Act proved insufficient. We have got another Act in 1912, slightly more rigid, but nothing like the English law.

Q.—But this is the beginning of industries in this country, and you don't want to make it very rigid to start with.

Hon'ble Sir R. N. Mookerjee.—*Q.*—The new Act is on the same lines as the English Act ?—*A.*—Nothing so rigid.

Mr. C. E. Low.—*Q.*—The Act is identical, almost word for word, with very little difference. There may be a difference in the way it is worked and applied, but I think it is the same. ?—*A.*—We have no banking law out here.

Q.—What banking law is there in England ; only about banks practically ; not much about the regulation of banking companies ?—*A.*—A great deal about the relation between the people and banks, but not about banking companies ; or at least very little. You may take it from me that the English and Indian Companies Acts are very nearly identical.

Hon'ble Pandit M. Malaviya.—*Q.*—Have you compared the two ?—*A.*—Only casually. We have had questions raised. I have taken the rulings from England and asked if they applied to India, and it was held they did not apply.

Mr. C. E. Low.—*Q.*—Such cases are few, and as a rule are of no importance.—*A.*—The power to pass resolutions is more simple in India than in England. An Indian company can change much easier than an English company can. We had a case the other day in which we thought the company was doing something illegal. We found that, according to the Indian Act, it was perfectly legal, although according to the English Act it would not be.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You want small companies with a separate Act ?—*A.*—I think it would be wiser to have a separate Act.

Q.—You want to apply this Act to all the people in this country, Indians and Europeans, alike ?—*A.*—I don't understand the question.

Q.—Do you think the law must be applied to all new companies, wherever started in any part of the country ?—*A.*—With option to the company to register under the small or the large Act.

Witness here gave confidential evidence.

Q.—Are you in favour of an industrial bank to help industries here ?—*A.*—I am not quite certain. What do you mean by an industrial bank.

Q.—A bank with a Government guarantee of dividends, or in which the Government has its own capital or by the raising of debentures, and in that way financing industries ?—*A.*—The People's Bank was an industrial bank, and the People's Bank was practically failing 6 or 7 years before it actually failed. It was bad from the start.

Q.— Supposing you have a bank where you have got experts on different industries, and after enquiries by the bank, from its own experts or from the Board of Industries, the bank lent money to a concern, would that be safe ?—*A.*—What I propose is co-partnership in the case of Government aid. Government should come in as co-partner and have a voice in the administration.

Q.—In what way would that give an impetus to people to start industries ? The share-holders are only investors ; they have no experience ; they don't learn anything ; they don't give an impetus to industries ?—*A.*—Government would not manage the whole thing ; Government would only be co-partners.

Q.—With the power of veto ; the Government voice is there. Do you think any respectable man would be a director there ?—*A.*—My impression is that you would get more respectable men.

Q.—In the Punjab, but not in other parts of the country. That will not give an impetus ?—*A.*—Who are the people to whom you are to give an impetus ?

Q.—The people who would have industries here ; the people of the Punjab. Take the case of the Punjab National Bank. Do you think if there was Government control over that bank, the members would be there ?—*A.*—The Punjab National Bank was rather pleased to have Government control for the last few years. You must have some idea as to who are going to do the business. Not the people of the Punjab. There are 675 castes in the Punjab ; which of those are going to undertake the industry ? All are not going to do it.

Q.—In Bombay we have several castes who go in for industries, and do very well. Nearly every concern is managed by Indians and most successfully, like any European company. In Bombay, when we commenced, our banks went " fut," but now we are alright. Many European companies also went " fut " and were purchased by Indians, and are worked successfully. In the Punjab they will be able to start business concerns after the failures they have had. They must be put in the way. That is the cause of this enquiry. We must give an impetus to Indians, and ascertain in what way Government can help in getting the industries of the country developed by Indians. You say " I believe existing banking institutions will lend aid if adequate security of a proper kind is forthcoming." Do you think present banks can help industries ?—*A.*—I have no reason to think otherwise.

Q.—Do they advance money on buildings and machinery ?—*A.* - I don't know. I am sure they advance money on any realizable security.

Q.—That is not helping industries ?—*A.*—Do your Bombay banks advance on unrealizable securities ?

Q.—Therefore you need industrial banks, to advance on buildings and machinery, not on liquid assets, cotton and sugar, but on the factories themselves ?—*A.*—The question is not there ; the point is that the banks which advanced money on buildings and machinery never realised interest for years.

Q.—Then you want a Board of Industries with a civilian at the head, and you want an Advisory Committee working under him ?—*A.*—Yes.

Q.—Supposing the Advisory Committee and the Director differ, what should they do ?—*A.*—I suppose the whole views would then go to this Development Commissioner, the President of the Board.

Q.—Has he the power of veto ?—*A.*—He has powers. It is a question of spending Government money.

Q.—In other provinces we heard quite differently ; that if the Board of Industries and the Directors differ, then the matter goes to Government. The Director has no voice to overrule the committee ?—*A.*—My idea is to have a Development Commissioner, who takes the place of Government. You have the same thing in England at present. I wish to introduce the English system into India.

Q.—England and India are quite different ?—*A.*—In some cases.

Q.—The whole legislature and everything is quite different. Then about the railways you say, " I may add that the prevalence of dishonesty amongst the Railway staff acts as direct tax on trade and commerce." I think that is on account of the poor control ?—*A.*—I think it is due to inadequate control.

Q.—You say " Where such a factory has proved successful, I would advocate a co-partnership arrangement whereby the workers could gradually take it over."—*A.*—Yes, my idea is that if you are going to have better work, you must train your workers up to our new methods and gradually train them to take up the concern as a co-partnership concern.

Q.—I will give you one instance of a man who started a factory in Bombay and made the shares Rs. 10 each, and asked my labourers, who were working and getting nearly Rs. 25 pay, if they would take up one share by paying Re. 1 every year, and even then they refused ?—*A.*—That is a difficult question.

Q.—They all like to have their cash first. That would be a very good system, if the workers can take a share each ?—*A.*—(No answer.)

Sir D. J. Tata.—*Q.*—I was going to ask the same question about co-partnership. It is ideal, but do you think that the people of this country are educated enough to take up this idea of co-partnership ?—*A.*—So far as I know, there are only four methods of running an industry, *viz.*, unlimited liability, a limited company, co-partnership, or on the co-operative system. The unlimited liability system is frequently practised, and the majority of our small industries are being run by them. The co-operative industry has generally proved a failure. You have therefore two methods left, limited liability or co-partnership. Limited liability has failed, owing to dishonesty, and you have left co-partnership. I am only talking about the Punjab.

Q.—About this co-partnership system, do you know of any place in India where the system exists, and where workmen have taken to this idea of co-partnership ?—*A.*—There is co-partnership existing in all villages between the village *lania* and the weavers.

Q.—That is hardly co-partnership ; it is merely exploiting workmen. Do you think it is possible in India, or even in England ? These sorts of things are not so numerous ?—*A.*—You have special difficulty out here. You have here what is called the commercial class, who object to working with their own hands. They at present have a monopoly of the brains and the capital. On the other side you have the industrial class, very uneducated, who have not got capital. What are you going to do ; you must combine them somehow.

Q.—Then you come to the rock-bottom idea of education ?—*A.*—Industrial education.

Q. Both industrial and also a little general ?—*A.*—Yes, but I put the industrial side first.

Q.—You say ; " The requirements of Government Departments, such as the Army, might be used as a bait to encourage enterprise, but I deprecate this constant intrusion of the idea that industrial development depends on Government action." Have you any idea where Government action should begin, and where it should end ? Have you any suggestions to make ? You admit that Government must give some aid to industries ; but you say that there is too much idea of depending on Government for everything. What is the province of Government in developing industries ? Where should Government aid end, and where should the people begin their own efforts ?—*A.*—I understand the idea varies in different countries. In England Government does not interfere in any way. Out here there is a certain demand for Government to nurse industries.

Q.—Because the people themselves are not competent to take these things up themselves. So, for India, and for your own province, how would you like Government to " interfere " ? To what extent, and where are they to stop their interference ?—*A.*—I suggest a way for that. I think Government should take up investigations on a very large scale. That is very much needed out here.

Q.—By investigation you refer to a survey for industrial purposes ? You think that one of the duties of Government should be a survey of the industrial possibilities of the country ?—*A.*—I think investigation would be needed.

Q.—Then these things would be laid before the public, and it would be for them to take up anything out of these, that looks promising ?—*A.*—That is one way.

Q.—But not further ?—*A.*—I have suggested that Government should start pioneer industries on a co-partnership basis, and gradually allow itself to be bought out.

Q.—You think it better for people to be allowed to stand on their own legs, that they would succeed better if they tried to help themselves ?—*A.*—I suggest nursing these industries : as people showed themselves capable of running industries by themselves, Government should gradually withdraw themselves.

Q.—Going back to what Sir Fazulbhoy said about the failures here, I believe what he meant was that you cannot make an omelette without breaking eggs ; and probably he thinks that these failures will ultimately conduce to the welfare of the country. Because, don't you think, we learn more from our failures and mistakes than from our successes ?—*A.*—I think failure is a very useful lesson, but you need not break the omelette as well. In the Punjab they break the omelette as well as the eggs.

Q.—Don't you think that these failures will lead to further caution, and induce people to take more interest in future in the business in which they have made investments ?—*A.*—The effect of failures has been practically to stamp out all enterprise. No one will come forward to put money into a limited liability company run by Indians, without Government supervision. Of course if you are willing to wait for 50 years for them to come round, as in Bombay, that is another matter.

Q.—Our recovery was not so long as 50 years ?—*A.*—If you asked these gentlemen privately, they will tell you their great difficulty is to find honest managers for all their concerns.

Q.—With reference to railway rates, I don't quite understand what you mean by "the hopeless intricacy of the present tariff." Do you suggest a universal rate for all commodities ?—*A.*—No, I refer to two things, in the first place the railway rates should be fixed with some regard to the economic interest of the province. At present they are fixed with the sole idea of getting dividends, and not competing with other lines : secondly, I think the present appalling complications should be simplified. I quote two instances here. You may have evidence on that later. I think the question of the wheat and flour rates has been submitted to the Commission from Delhi.

Q.—With reference to your answer to question 60, you say: "I would rather allot them to the Director of Industries who should be a non-expert official with expert assistants." In the very next sentence you say : "The ordinary businessman could hardly be expected to be master of every industry" ; much less the official. Is it not so ?—*A.*—The official would not pretend to be a master of industries, that is the difference. Have an official Director with masters of industries on his Council.

Q.—The Director of Industries, you say, should be an official ; because an ordinary businessman cannot be master of every industry. That seems to be a contradiction ?—*A.*—In one case you have got to have someone to do the work I am doing now ; someone to do the administrative side of the Director of Industries. Half his day is spent on purely administrative work. You have either to get two men, or one. If you have two, you can have your businessman Director and your non-businessman Director, and then put your businessman on the Council.

Q.—You say : "Government desires to see industries, the commercial class wants to see big profits, and the two views are not always compatible." What do you mean by that ?—*A.*—I mean the primary cause of the failure of industries in the Punjab was the desire to put dividends above safety.

Q.—Naturally anybody who starts an industry would like to see some profit ?—*A.*—But you must not take your profit out of the capital.

Q.—That is perfectly true. Do you say that the Government desires to see industries, even if there are no profits ?—*A.*—The object is to see industries, which give work to the people, quite apart from the shareholders.

Q.—And the province of Government is to find work for workers ?—*A.*—Not necessarily.

Q.—Who would invest if they could not get a return for their money ?—*A.*—It is a question of a reasonable return.

Hon'ble Mr. H. J. Maynard.—*Q.*—As regards that last point, I understand you to mean that there is a distinction between profits and dividends ? Profits would not necessarily take the form of dividends ?—*A.*—I wish to see both.

Q.—Primarily what you want to see is profit, not a larger proportion of dividends than is justified by the true position of a business concern ?—*A.*—May I put it in this way ? Being very anxious to see this province developed, I would like to see the industrial advancement of this province gradually taking place. Other people would like to put in a hundred rupees in a concern, and start drawing 12 per cent the next year. If the man who put in Rs. 100 would be content to wait for 2 or 3 years, and take a small dividend until the industry was built up, it would be all right, but the danger is that people expect dividends right away.

Q.—You would like to see an adequate proportion of the profits put to depreciation, and an adequate proportion to repairs ?—*A.*—Yes. I should prefer to put safety before my 6 per cent.

Q.—There was some question about the two Acts, the two forms of Act for the two companies. Did I correctly understand you to mean that it would be entirely optional with any company, which was small enough to do so, to register under the stricter Act, or less strict Act ?—*A.*—I would allow them option.

Q.—No one would be bound by the stricter Act unless he accepted some measure of Government control ?—*A.*—Yes.

Q.—As regards the method of making railway rates more consonant with the economic interests of the province, at present, as I understand, there is a maximum and minimum rate fixed by the Railway Board, but within those limits each railway fixes its own rates ?—*A.*—Yes.

Q.—If that is so, I suppose that some representatives of industries sitting on the Railway Board would perhaps be able to influence the actual rates as imposed by a particular railway. Would that meet the case ? A representative of industries sitting on the Railway Board, which, as I believe, controls the maximum and minimum rates. Would that suffice to give you a sort of agency to determine the railway rates which you would wish to get ?—*A.*—I should first like to have the question of railway rates thoroughly examined, from the point of view of the economic interest of the province. I would like an investigation made before giving an opinion.

Q.—I was thinking of machinery ; a sort of permanent representative of industries sitting with the Railway Board, or being associated with particular officials of, say, the North-Western Railway, who do the actual determining of the rates. Would one of those methods be likely to be efficacious ?—*A.*—Have a representative of industries on the Railway Board and a certain amount of Local Government control over rates in the province.

Q.—Control is one thing and the association of the Director of Industries with the particular authorities who determine rates is another. Would that railway give you what you want ? If you sat with the General Traffic Manager, or somebody, and you had an opportunity of making your representation, would that be the sort of way to get what you want ?—*A.*—This railway is an Imperial department. In my answer to question 57 I have simply suggested a liaison officer. I did not suggest that the Traffic Manager should be a Member of the Board of Industries. That is an obvious thing to do.

Q.—And conversely, the Director of Industries should be a member of some committee who determines the rates ?—*A.*—Yes.—That would tend to progress.

Hon'ble Sir R. N. Mookerjee.—That won't solve the difficulty. A man sitting on the Railway Board would not be able to control rates of any other railway like that. Unless there was a special committee, taking all the rates and revising them, and submitting them to the Railway Board for sanction, it would not work.

Hon'ble Pandit M. M. Malaviya.—*Q.*—How long have you been Registrar of Co-operative Societies ?—*A.*—Two years in co-operative work and 1½ years in joint stock companies.

Q.—Did you make any special study of this subject of co-operation ?—*A.*—Yes, I had studied that in Ireland on furlough.

Q.—The first time you were appointed Registrar was in this province ?—*A.*—Yes.

Q.—You refer here to the practice of securing sufficient proxies ; are proxies secured with the object of controlling meetings, or of obtaining a quorum to get on with the business ?—*A.*—What I understand actually happens is this : the Managing Director appears ; he says, " With reference to resolutions 1, 2 and 3, we have sufficient proxies. I pass the resolution," and the meeting ends. There is no discussion.

Q.—Have you attended many meetings of shareholders since you were appointed Registrar ?—*A.*—I attended none.

Q.—Then this is from hearsay ?—*A.*—From gentlemen coming to my office.

Q.—Have many gentlemen said that such things happened at meetings, that the Managing Director said to them." I have got proxies, I over-rule the discussion ?"—*A.*—Yes.

Q.—You say here : " The Directors try to pay big dividends by (*a*) omitting allowance for depreciation, (*b*) appreciating the value of property, (*c*) omitting to spend adequate sums on repairs and maintenance, and (*d*) omitting to make reserve for bad debts, etc." How do they appreciate the value of property in your experience ?—*A.*—They write up the value of buildings and machinery. Sometimes, say, there has been a bad year, and no profits to pay dividends. They write up the land value as having risen this year, and pay dividends out of that.

Q.—They don't do it from the beginning ; they wait until some bad time comes, and then to tide over the difficulty, they have recourse to this method ?—*A.*—As a matter of fact you assume there was a time when these companies were making profits.

Q.— No, I don't. I want to know whether they start appreciating the value of property from the first year of their balance sheet, or do they do this when they wish to show that they can give a dividend when they really cannot. Do they have recourse to this practice in the normal course ?—*A.*—Dividends are paid from various funds ; dividends are seldom paid out of profits. They put down a certain sum as preliminary expenses and pay dividends out of that : they say land has risen in value and pay dividends accordingly. Sometimes they forfeit a few shares and pay dividends out of that. I am speaking entirely of the Punjab.

Q.—Will you give us any instance where a company showed Rs. 10,000 as preliminary expenses and distributed the amount as profits ?—*A.*—There are cases of Multan companies which were run on that principle. The Bank of Multan was one. This is the only case I know where the shareholders took part in the proceedings. They met and discussed matters and dismissed the man, and proceeded to put the bank on a sound footing, but it was too late. That was started in 1907, and went on for four years under that particular management. The new management was trying very hard to restore the position, but it was too bad. The same man had a group of companies in Multan. He went into liquidation.

Q.—What were the dividends paid ?—*A.*—The dividends don't always come to me. Enquiry was made, the man was prosecuted and sent to jail.

Q.—Can you tell us what dividends were paid during those 4 years. Have you any information to tell you that dividends were paid in those days ?—*A.* I have only made notes. From actual enquiry which was held in these cases, he showed a profit in those years The Bank of Multan paid 7 per cent., 7 per cent. and 5½ per cent. He met his dividends out of forfeited shares and preliminary expenses.

Q.—In regard to the second company ?—*A.*—I have got the profits but not the dividends. It was a small company. He used the preliminary expenses to cover his losses and show his profits.

Q.—Can you tell us of any industry in which the same thing happened, *viz.*, putting up preliminary expenses in order to pay dividends ?—*A.*—Or to cover a loss ? The Bank of Peshawar. That paid 6 per cent. That man has gone to jail also. This is the Liquidator's Report. There was really a loss of Rs. 28,000 but he added Rs. 49,000 forfeited shares, Rs. 15,000 were forfeited from two Directors, Rs. 35,000 from preliminary expenses.

Q.—Will you kindly confine yourself to the question whether dividends were paid ?—*A.*—I have not made a note of the dividends.

Q.—Is there any other company in which this was done ? How many companies have you had to deal with during these years ?—*A.*—There are about 68 companies in liquidation at present, and there were 150 altogether.

Q.—Apart from these, were there any others ?—*A.*—I have got a company which put up its price of land, in order to declare a profit. I have not got the file here.

Q.—You say : " From these it appears that the system of reserve liability does not work satisfactorily. The shares are frequently so small that the danger of loss does not excite any interest." You know the Punjab Co-operative Bank ; what was its subscribed capital ?—*A.*—For what period ?

Q.—Up to the time when the bank was closed ?—*A.*—The paid-up capital was Rs. 8,25,000.

Q.—Up to the time that it closed ?—*A.*—December 1913. They suspended paymen in December 1914.

Q.—What was the value of the shares roughly of this company : how many share holders shared these 8 lakhs ?—*A.*—The number of shareholders was 1,139, of whom 30 were defaulters.

Q.—You have then about 800 and the shares would be about Rs. 1,000 for eac holder ?—*A.*—These defaulters were probably defaulters in the last call. This Punja Bank received its capital every year.

Q.—I am confining myself to the time it closed. You would not say that the share were small in that case, looking at the average holding of the shareholders ?—*A.*—Th Punjab Co-operative Bank was rather different from most banks, in that the shares were on the whole, better distributed. They had a very large number of members holding 1 and 15 shares.

Q.—In the case of Lala Harkishen Lal's Bank, what was the average holding of shareholders. Take the People's Bank and the Amritsar Bank, I understand those were the two principal banks ?—*A.*—I can send you any records you wish. I have only brought notes. In regard to the People's Bank, there were about 15 odd companies run by Harkishen Lal. Some of these held large holdings ; the vast majority held one share each only. Then Harkishen, under the name of the Pioneer Investment Company, held 11,000 shares.

Q.—I think that a better course would be if you could give us a statement showing the capital paid-up, deposits, loans, expenses, etc., of Indian banks which have been in liquidation here ?—*A.*—This is one relating to the People's Bank, which may give you some information. (Hands statement to the Hon'ble Pandit M. M. Malaviya.) I can only give you statements filed with me.

Q.—The object of my enquiry is that we should know exactly what were the causes which led to these failures, so that we should be in a position to know what to recommend to Government for the future. You said that there was one company in which Rs. 400 was paid-up, and 15 lakhs was the nominal capital. Which bank was that ?—*A.*—The bank with an authorised capital of one crore, and a paid up capital of Rs. 8,500.

Q.—At what time was it closed ?—*A.*—Twelve months after it started.

Q.—So that you cannot say that it was properly floated ?—*A.*—It was founded in April 1913, and failed in March 1914, at the time of these failures.

Q.—Are there any other companies like that ; Banks which existed when the People's Bank failed, in which the paid-up capital was disproportionately small compared to the nominal capital ?—*A.*—The Punjab Mercantile Bank, founded in 1909, with an authorised capital of 5 lakhs failed in 1914 with only Rs. 7,000 paid. The Public Banking and Insurance Co., was founded in 1909 with a capital (nominal) of 10 lakhs, failed in March 1914 with a paid-up capital of Rs. 1,964.

Q.—Was it working all this time, or merely nominally in existence ?—*A.*—I cannot tell you. I will look up the record and let you know.

Q.—You refer here to the difficulty in calling up this reserve liability as being practically useless. In the case of the People's Bank, the amount of paid-up capital was 13 lakhs out of 22 ?—*A.*—Rs. 12,52,000.

Q.—That was out of the 22 lakhs of the subscribed capital ?—*A.*—Yes.

Q.—Was 4½ lakhs realised by the liquidators ?—*A.*—I believe something like that.

Q.—Judging from what they have paid-up, about 4 lakhs was realised ?—*A.*—I believe so.

Q.—Was this largely done by letters sent and not by suits ?—*A.*—A large number of suits were filed.

Q.—What was the amount realised largely by letters ?—*A.*—My recollection is that they had a lot of suits as well.

Q.—Can you say that the great bulk of it was realised after the suits ?—*A.*—I don't think the liquidator in his report has shown the amourt paid-up by suit and the amount paid up by letters.

Q.—Evidently they had not much difficulty in realising the amount ?—*A.*—He has been going for four years and has not got that balance yet. Most of the liquidators in their reports say it is not worth while attempting to call up the uncalled liabilities.

Q.—I understand the liquidators say they expect to pay 16 annas in course of time ?—*A.*—It depends on what you mean by the " course of time."

Q.—Have they held out the hope that they will pay 16 annas ?—*A.*—I don't know. I think you had better examine me confidentially about this.

Q.—You say the majority of these shareholders seem to be of the Khatri caste. Have you any information about it, or is it a mere conjecture ?—*A.*—It is a fact. I have not worked it out percentagely, but it is roughly 90 per cent of the shareholders who are Lalas. Lala in the Punjab usually means Khatri.

Q.—Do you know Lala Mool Raj ? Is he a Khatri ?—*A.*—I don't know.

Q.—You say here in regard to joint stock concerns that liquidation has taken a very long time in the case of some of these. Towards the end of that page you say : " There is seldom anything put to reserve." Do you know what the reserve of the Punjab National Bank is ?—*A.*—I have not made a note.

Q.—I understand it is 10 or 11 lakhs ?—*A.*—You had better ask me that confidentially.

Q.—And also about the Punjab Co-operative : do you know what is its reserve ?—I will tell you confidentially.

Q.—The People's Bank reserve was Rs. 2,75,000 ?—*A.*—The whole of that reserve disappeared.

Q.—You speak about long liquidators' proceedings. Do you think they are very abnormal, these proceedings, in their length ? Do you remember the time the Bank of Calcutta took for liquidation ?—*A.*—I only speak from my records. I have no record of the Bank of Calcutta.

Q.—Nor do you know of the liquidation of any other bank outside the province ?—*A.*—These are from my records. I am not giving you my opinion.

Q.—You think the time it has taken is very long, and that it could be done quicker ?—*A.*—Yes, I think it could be d ne quicker.

Q.—You say : " I deprecate this constant intrusion of the idea that industrial development depends on Government action." Will you kindly explain what you mean ? Do you want no Government help to be given to industries ?—*A.*—I think the industry would be a more sturdy plant if left to grow itself by the independent action of the people.

Q.—Have you studied the industrial growth of companies in Japan, Germany, etc., and do you know how Government help has fostered industries there ?—*A.*—I have read about it.

Q.—Don't you think that the desire to ask for reasonable Government help is based on experience, and justified by the experience of other countries ?—*A.*—I happen to come from Lancashire, and in Lancashire we are very independent of Government aid.

Q.—Are you not aware that even in England it is being recognised now that Government aid is essential to enable British manufacturers to hold their own against the competition of manufactures of other countries ?—*A.*—No, I don't know that ; they are developing agriculture by Government aid, not industries.

Q.—You say here that the control of Government should take various forms and you mention them. Do you think Government should take the responsibility of selecting managers for concerns ?—*A.*—No : I would not say that at all ; but occasionally a manager may make himself unpopular by making full allowance for depreciation.

Q.—You suggest that the appointment or dismissal of the manager might be subject to Government approval.—What means will Government have to find out the competency or otherwise of a particular manager ?—*A.*—Government will be in an impartial position. In these Punjab companies you find a Director who gets appointed first and studies the industry afterwards.

Q.—Are you not putting a great responsibility on Government in asking them to approve the appointment of a manager ? The concern might come to grief ?—*A.*—Government does not select the manager ; Government would simply see that the manager had certain qualifications.

Q.—But suppose the company does not feel satisfied that approval has been withheld for good reasons ?—*A.*—The company will select the man and Government would see his record after they select him.

Q.—You think that Government should get all the information necessary about the man to be appointed and then express their approval or otherwise ?—*A.*—I think the Directors would be rather more careful about their selection, if Government had to approve of the manager. That only refers to companies in which Government is giving assistance.

Q.—You say : " These sums were advanced to companies which neglected vital business principles, and collapse was merely a matter of time." What principles had you in mind in that sentence ?—*A.*—The money was advanced to companies which practically never earned a profit. Those companies practically never paid any interest on the sums advanced. Interest was just added to the principal of the loan. That went on for a period of years, so practically the bank was every year lending more and more money to companies which were really worked at a steady loss. That went on, in some cases, for 8 years.

Q.—In many cases or in a few only ?—*A.*—In most of the cases in which the People's Bank was concerned.

Q.—Have you got any statement showing, as far as the People's Bank is concerned, these advances, and the condition of the companies to which they were made ?—*A.*—Some of these companies are not yet in liquidation, so I had better not give the details.

Q.—Can you give me details later on ?—*A.*—I don't mind handing across the notes. Here is a company which began with a small borrowing in 1905, and went up to 9 lakhs of rupees borrowed. Those 9 lakhs rose by exactly the amount shown by interest ; practically they were adding interest and showing it as paid. That went on throughout this time though if they had shown depreciation, they would have shown a loss.

Q.—Did you find out whether there was good security when the money was advanced? Does the account show it ?—You will agree that it may be possible that a company which may have started under very hopeful conditions may fail to make a profit for some years. That may happen even when very good security was taken by the bank ?—*A.* This company was paying a dividend all the time.

Q.—The test would be whether there was sufficient security for the advance when it was made ?—*A.*—Not necessarily : if your loan is increasing every year by large sums, and your security remains the same, that indicates the unsoundness of your position.

Q.—That would affect the question of the loan being withdrawn ?—*A.*—In this particular case the loan rose from 9 lakhs to 22 lakhs by adding interest on to it. They never allowed for depreciation, but paid dividends.

Q.—Does it also show how the assets were growing during that time ?—*A.*—Buildings and machinery, by 70,000 a year ?

Q.—That means they had added to the buildings and machinery. Have you satisfied yourself that the buildings and machinery did not grow ?—*A.*—Where did the money come from ? Look at the balance sheet ; if you see investment on capital account, you will ask where did that money come from ?

Q.—Did you satisfy yourself that the buildings and machinery were not added to during those years ?—*A.*—We know that on the whole the assets had not increased. This happened to be a company which brought down the People's Bank. Twenty-two lakhs were locked up, and they could not pay anything back. The actual cause of the failure of the People's Bank was that it had enormous sums of money locked up, which could not be recovered.

Q.—Under paragraph 10 you say: " It should be illegal for a bank to advance money to other concerns under the control of their Directors." That is one of the things you want to provide against by the new law. Do you know that in some countries, particularly in Germany and America, it is the practice that the directors of a bank, which is interested in an industrialconcern, goon to the Board of that concern as directors, in order to see

that the money is properly spent, and to be able to exercise a certain control? Do you know the case of Baring Bros. and of Morgan & Co. That practice is recognised as sound?—*A.*—I don't think that this Punjab practice would be recognised as sound in any country in the world. The People's Bank advanced 75 per cent of its capital.

Q.—You are not aware of that practice?—*A.*—I am quite certain that this would not be regarded as sound practice in any country in the world.

Q.—That is another matter. In practice it may be deviated from; but the rule which you attack here is regarded as sound there?—*A.*—I think it is abused here.

Q.—It may be abused, like any other rule, but the question is, is it wrong in principle?—*A.*—The idea is to try and build up industries on sound lines. I have given suggestions here to develop industries on sound lines. I understand the American custom led to very grave crises, and they have recently passed a Federal Banking Act.

Q.—Do you know the Deutsche Bank? The Directors of it are members of over 200 concerns, to which they have lent money?—*A.*—I know in America that inter-lending led to an Act being passed to stop it.

Q.—You say: "The Punjab is essentially an agricultural province, poor in minerals and peculiarly void of any considerable through trade." And then you say: "It therefore seems to me that any development on the industrial side must depend on the progress of agriculture." What amount of cotton do you export out of the Punjab?—*A.*—It does not come under me.

Q.—You know a large quantity is exported?—*A.*—I think so.

Q.—Don't you think it could be worked up in the province, spun into yarn and woven into cloth?—*A.*—I am not an expert in cotton. I believe there is some difficulty in the dampness of the climate.

Q.—Cannot the wool trade also be developed here?—*A.*—Possibly; we have not much in the Punjab.

Q.—You suggest a civilian Director: do you think a civilian Director would have the training necessary to be the head of industries, as Director of Industries?—*A.*—I am taking a practical view. I don't see how you are going to get your ideal businessman.

Q.—And you think that in the absence of an ideal businessman, a civilian will supply the necessary qualifications?—*A.*—A civilian with a Board of businessmen would be better than a businessman.

Q.—Don't you think that in many matters the presence of a non-expert man at the head is likely to lead to injury and loss?—*A.*—Possibly. I am talking about the practical side. Somebody must do joint stock companies; somebody must do administrative work. A businessman would not care to do it.

Q.—With regard to railway rates, don't you think that there should be representatives of trading interests and of the general public on the Railway Board in order that rates should be settled in a fair way?—*A.*—I think a Member of the Industrial Department will do.

Q.—Don't you think that a representative of industrial concerns and a member of the general public should be represented on this Railway Board to see that the rates should be properly settled through the Board?—*A.*—No: I don't think so. I have never heard of it being done anywhere.

Q.—You don't think it would help to adjust differences?—*A.*—I don't think so. There would be too much divergence of view.

Sir F. H. Stewart.—*Q.*—Do you think there should be an Official Liquidator in India?—*A.*—The difficulties of liquidation are very often personal. You may have a case of a managing director of a bank who is also appointed a voluntary liquidator of banks. As a managing director he may have lent out large sums of money, perhaps several lakhs, to certain millowners; and when it comes to liquidating, he is very apathetic in recovering the money which he himself has lent. In that case possibly an Official Liquidator may be more useful.

Q.—I am asking you to give an opinion based on your experience?—*A.*—Liquidation work is very unsatisfactory, so that I think an Official Liquidator would be of great benefit. We have at present 68 companies under liquidation. I don't see how you can establish credit and begin to start your industries exactly the same.

Hon'ble Pandit M. M. Malaviya.—*Q.*—Is it within your knowledge that where you have had an Unofficial Liquidator in these companies under liquidation, the results have been more satisfactory than when you have had an Official Liquidator. In the case of the Punjab Co-operative Bank has not the result been more satisfactory?—*A.*—I think I would like to answer that confidentially.

WITNESS No. 376.

PANDIT BALAK RAM PANDYA, *Auditor of Accounts, Lahore.*

WRITTEN EVIDENCE.

It is usual in such cases to begin with a statement of one's credentials. My credentials may be stated in a few words. I am no industrialist; nor have I any first hand knowledge of industries, their promotion, management and control. On the other hand I am an auditor by profession, and I may claim to have acquired some knowledge of those aspects of the problems of industrial development with which I have been brought into touch in the exercise of my vocation. The firm of Messrs. Basant Ram and Sons, of which I am the managing Proprietor, is of about twenty years' standing. The companies, associations and corporations whose accounts have at sometime or other been or now are audited by my firm comprise banks, spinning and weaving mills, cotton presses, factories, insurance companies, flour mills, trust societies, coal mines, public libraries and newspapers and last but not least manufacturing and trading companies, railway and other co-operative stores, recreation and other clubs, literary, learned and such semi-Government bodies as the Punjab University, the Punjab Text Book Committee and the Punjab Public Library. Of the banks now in liquidation we have been auditors of the People's Bank of India, Limited, the Amritsar Bank, Limited, the Punjab Co-operative Bank, Limited, the Doaba Bank, Limited, and the Gorakhpur Bank, Limited, while of the banks which have outlived the crash, we are auditors of the Punjab National Bank, Limited, the Benares Bank, Limited, the Lyallpur Bank, Limited, the Frontier Bank, Limited, and the National Bank of Upper India, Limited. It will thus be seen that while such knowledge as I have of the problem under investigation by the Commission is confined mainly to those aspects of it that relate to the working of banks or of joint stock industrial enterprises, I may claim to have inimate knowledge of these particular aspects. I shall, therefore, be best consulting the wishes of the Commission if in giving evidence before it I dwell mainly upon these aspects, and only secondarily upon some of the more general aspects.

Reasons for failures.

It is a matter of common knowledge that during the last four years the cause of banking as well as of industrial development has received a great setback in this province. A large number of banks and allied concerns have gone into liquidation and capital, by which industrial development is strictly limited, has admittedly become shy. As auditor of some of the most important of the concerns which have failed I have had special opportunity of studying the causes that have led to their failure. I do not think I could better or more profitably utilise the opportunity which the Commission has afforded to me than by drawing their attention to these causes. After all it is only when we know the causes of past failures that we can provide against failure in the future. So far as the Punjab is concerned I am perfectly certain that no progressive step is possible until the causes of past failures have been properly studied and the defects and shortcomings responsible for them have been at least partially removed. Accordingly I have gone as deeply into the matter as my opportunities permitted and have arrived at certain conclusions which I venture to lay before the Commission for such use as they may choose to make of them.

As regards the bank failures I attribute them to the following main causes :—

1. *Shareholders.*

(*a*) Apathy and indifference of the shareholders, and their not taking care to appoint a competent Board of Directors with practical business experience.

(*b*) Absence of any control on the part of shareholders.

2. *Board of Directors.*

1. Lack of practical banking experience and technical knowledge.

2. In some cases the Directors owed their seats to the Managing Director or to the Management or to active canvassing among the shareholders with the help of the Management. They were thus unable to exercise their independent judgment.

3. The Board of Directors had practically left the entire management in the hands of the Managing Director or Managers without providing proper check or safeguards against abuse of power and authority.

4. The appointment of men as managers, agents or other officers in immediate control of business who had no practical knowledge or experience of the business.

5. In some cases men had by vigorous canvassing secured seats on the Board; and they lost no opportunity of utilising the position thus gained to help their relatives, friends and protegés to further their personal interests and otherwise to benefit themselves.

3. *Management.*

1. Managers had little or no practical experience of banking.

2. Men who had worked merely as subordinates in other institutions and knew little more than routine work, were placed in charge of the banks and their branches.

3. Low-paid Managers, Accountants and clerks who became willing tools of their employers.

4. *Methods of business.*

1. Slavish imitation of what was done by other banks irrespective of requirements and resources.

2. Readiness to embark on speculative adventures of a dangerous character.

3. Combining other business of a miscellaneous character with legitimate banking.

4. Authorised and unsubscribed capital was out of all proportion to paid-up capital.

5. (*a*) Lending money on insufficient or no security.

(*b*) The combination of lenders and borrowers in the same person.

6. Making advances on mortgages and long-dated loans though the deposits received were repayable at short periods.

7. Not holding sufficient cash for liabilities payable on demand.

8. Not keeping sufficient funds in easily realisable or liquid securities.

9. Absence of sound public criticism.

10. Locking up funds in concerns belonging to the Directors or in which the Directors had a direct or indirect pecuniary interest and excessive inter-connection and inter-dependence of concerns under common Directors.

11. Receiving deposits at high rates of interests, and the consequential necessity to accept risky investments.

12. Large borrowings by the Directors for their own private speculations.

5. *Bad account keeping.*

1. Account keeping was entrusted to inefficient men.

2. A defective method of book-keeping. The accounts were not posted regularly and thus the dues were not properly dated for collection.

6. *Miscellaneous.*

1. Lack of support from well-established banks at a time of stress and want of mutual combination or co-operation.

2. Adverse criticism, and the efforts made by those connected with the banks that had failed to bring about the downfall of concerns which had withstood the first crash.

As regards the industrial failures the causes are these :—

(1) Want of technical knowledge and business experience.

(2) Deficiency—(*a*) Capital.

(*b*) Capacity of the plant.

(3) Heavy borrowings at high rates of interest and the undue facility with which money could be borrowed.

(4) Heavy commissions and fees paid to the Managing Directors or Agents.

(5) Non-provision of maximum limit of expenditure in connection with the cost of manufacture.

(6) Absence of all consideration for finish and taste in manufacture.

(7) Want of promptitude and punctuality in the execution of work.

(8) Over-valuation of stock.

(9) Production or manufacture irrespective of the requirements of the market.

(10) Over-stocking.

(11) Manufacture being made subsidiary to speculation in raw materials.

(12) Combination in one person or group of persons of the functions of Director, Managing Director, Managing Agent, Partner, Lessee, Contractor, Supplier, Legal Adviser, Insurance Agent, etc.

It will be seen that in both cases inexperience and defective methods on the part of the management had much to do with the failures. The fact is that banking in the western sense was essentially a new enterprise in the Punjab ; and so were the industries that failed. This is at once the reason why there were so many honest mistakes and also the reason why in a number of cases selfish or dishonest men succeeded in obtaining the upper hand. Success in every sphere of life is determined by the amount of ability or cleverness which men bring to bear on their work, and India is not the only country where ability and cleverness on the one hand and unscrupulousness and a spirit of self-aggrandisement on the other sometimes go hand in hand. Indeed, when we compare the recent bank and industrial failures in the Punjab with similar incidents in other countries we are astonished at the comparative small proportion of cases in which the failures in our case were due to dishonesty or selfishness. The price we have paid for our inexperience is undoubtedly heavy, but it is by no means heavier than what other countries have paid before us. If we have only learnt the lesson which the disasters of the last four years so impressively teach, there is surely no room for despondency.

I will now pass on to a subject which is allied to this subject of bank and industrial failures, the attitude of certain European banks towards Indian enterprise. It is a matter of common knowledge that some of the failures would never have occurred if the European-managed banks had been more sympathetic than they were. The most conspicuous case is that of the Punjab Co-operative Bank. By common consent the Punjab Co-operative Bank was one of the best-managed institutions in this Province, both its investments and its business methods being generally sound and above reproach. And yet when the hour of trial came, this bank failed to obtain the support that would have saved it from going into liquidation. And there are similar other cases. It must be said in this connection that the attitude of Government officials was all that it could be, but they were helpless. It was the Presidency Bank and other European-managed banks that alone could have rendered effective help and it must be said with regret that they entirely failed to rise to the height of their duty. There is a widespread belief that this was due to the existence of a policy of discrimination in favour of European and against Indian enterprise. So far as the Presidency Bank is concerned, there is absolutely no justification for such a policy, for they are extensively assisted by the State out of public funds. One remedy for the present deplorable state of things lies in making State-aided banks accept an adequate number of Indians both on their board of directors as well as on the management. It is inconceivable that if the Bank of Bengal, for instance, had Indians among its responsible officials, it would have acted in the unsympathetic way it did in one of the most critical periods in the Punjab's financial history.

There should be at least one bank helped by the State in each important Province. At present there is only one such bank for the whole of Upper India, the Bank of Bengal, with the result that the Local Government have no control over this bank. If the Punjab had its own bank, that bank would have been more susceptible to local official influence than the Bank of Bengal proved to be during the recent banking crisis and would in all probability have come to the rescue of the better-managed banks, the Punjab Co-operative Bank for instance.

Industrial banks.

But while a Provincial Bank doing business on a large scale and making no discrimination between European and Indian enterprise would undoubtedly be beneficial to the cause of industrial development, it is obvious that it cannot by itself go a very long way. The cause of industrial development in a country requires a vast army of workers, most of whom could, under no conceivable circumstances, be directly benefitted by either Presidency or other banks doing business on accepted commercial lines. Such banks could finance industries only with a part of their working capital, and this they could do only on the security of their stock of raw materials or other similar assets. They cannot possibly give facilities in the shape of fresh capital needed for extension of business. The officers of an ordinary bank, moreover, have not the requisite fitness to judge of the value of such securities as most industrialists are able to give, nor are the securities such that if the banks failed to realise the loan when it fell due, they could be sold as easily as other forms of securities with which commercial banks are familiar. Lastly, and this is the most important point to be borne in mind, in the very nature of the case such banks cannot afford to lock up their funds for long periods, which is precisely what they would have to do if they wanted adequately to help industries. In all these aspects industrial banks would not only admirably serve the purpose of industrialists, but could alone serve those purposes. These banks would borrow for lon-

periods and would, therefore, be able to lend for long periods without incurring any risk. They would, moreover, have a staff capable of judging whether the concerns they are asked to help are sound from a technical and business point of view. I have no hesitation in recommending the establishment of at least one such bank with Government aid, if necessary in every Province as a condition precedent to the industrial development of that Province.

Commercial education.

Next to capital the thing that is most needed for industrial development is technical, industrial and commercial education. At present the provision for such education either does not exist at all or is extremely inadequate in this Province. Commercial classes are maintained in connection with certain educational institutions and a commercial examination is held. But the education that is imparted is of little or no practical value, while the examination is perhaps the least popular of all examinations held under the auspices of the University. It is a highly significant fact that while for every other examination the number of candidates has actually doubled during the last decade, the number of candidates who appear at the so-called commercial examination either stands exactly where it did a couple of decades ago or has actually gone down. And this in spite of the fact that there is not only a real and insistent but a rapidly growing demand for what is called practical education. This deplorable state of things is largely due to the fact that commerce and industry are interests which practically go entirely unrepresented on the Senate of the University, and as a natural consequence commercial teaching is still in the elementary stage. If commercial education is to serve the purpose which it does serve in other countries, it is clearly essential that it should be imparted on an improved as well an extended basis. It is perhaps their recognition of this fact that has led the authorities to contemplate the institution of a higher examination in commercial subjects than what exists at present. But it seems to be forgotten that if the higher examination is to be more successful and more popular than the lower one has been, those who conduct the examination must be either men of commerce themselves or at any rate actively in touch with commercial development ; and that of such men there are at present very few in the University Senate. The same is the case with industrial and technical education. Here, as in the case of commercial education, what is necessary is to equip men not for clerkship, but for an actual industrial career, to turn out managers, supervisors and organisers. For this it is essential that there should be at least one great technological college in each Province. Everybody knows the part which such Colleges have played in the industrial development of other countries, India must follow the example of those countries if it wishes to achieve the success they have achieved.

Industrial development necessary.

Much injury, it seems to me, has been done in the past by the idea that India is destined to remain for all time an agricultural country. To my mind the appointment of the Industrial Commission is a practical protest against this idea. That agriculture must remain one of India's most important industries, if not the most important one, is probably true, but that does not mean that there is not the same room for a good many other industries in India that there is in other countries. India is a vast country, with pratically unlimited resources both in its raw materials and in those human energies that are to turn these materials into finished products. It is mainly on account of lack of organised, systematic and intelligent effort that these resources have hitherto remained undeveloped. If the Government and the leaders of the community will co-operate in making this effort India will soon rival, even if it does not out-distance, most countries with which at present she competes so unfavourably. And there is no direction in which such co-operation is more essential or will do more real and immediate good than in organizing a comprehensive system of technical and industrial education. Such education will not only enable the country to make the best use of the capital that is already invested in industries, but will have the effect of drawing more capital into the field of industrial development and will make it possible for India to outgrow the purely agricultural stage more completely than it has been able to do so far. I have never taken any part in company promoting but I cannot be wrong in thinking that would-be investors would immensely prefer industries which are under the management and control of trained and experienced men to those which are run by inexperienced enthusiasts. Here I may parenthetically state that the existence of a system of sound industrial, technical and commercial education would have prevented many of the banking and industrial failures of the last four years with all their incidental results, the most disastrous of which has been the increased shyness of capital and the shaking of credit.

This leads me to remark that a wider diffusion of primary education is quite as essential to the highest development of industries as the organization of a comprehensive system of technical and industrial education. The success of an industry under modern conditions depends nearly, if not quite, as much on the efficiency of the ordinary skilled and unskilled labourer as on the competence of the few men at the top. And the efficiency of the ordinary labourer whether skilled or unskilled, is, to no small extent, dependent

upon the general education which the labourer has received. Nowhere are ignorance and illiteracy a graver danger or a most formidable obstacle to progress. From this point of view the movement which has simultaneously begun in almost all the several important Provinces towards making elementary education compulsory is a matter for sincere congratulation. All that is necessary is to accelerate the movement.

I have said that the thing most needed for industrial development after capital is a sound and comprehensive system of technical, industrial and commercial education based upon universal primary education. It remains to add that even when these indispensable requisites have been supplied, something else will still be necessary before India can take its place among the great industrial nations of the world. The State in India must do what the State has done and is doing elsewhere. Opinion may differ as to the best form that State aid can take, but it is essential that the State should take its rightful place at the head of the industrial movement. I take the appointment of the Industrial Commission to mean that the State is now fully alive to this duty. The Commission itself, I rejoice to find, has framed a number of very important questions under this head and has, indeed, given the foremost place in its list of questions to those under the heading "financial aid to industries." It is a pity that by the terms of reference to them the Commission are precluded from including in its investigation what is perhaps the most important question under this head, namely, the advisability or otherwise of a protective tariff. Most educated Indians hold strong opinions on this subject but as this matter will come up for consideration later, I will not say anything further in regard to it beyond expressing the hope that no undue delay will be made in taking up this supremely important question.

Financial assistance from Government.

Of the several forms of State aid referred to in question No. 5, I may say in a general way that all of them are legitimate and all of them may be tried according to the circumstances of particular cases. I am particularly in favour of the last four being more or less extensively tried, while the third and the fourth may be tried in a limited number of suitable cases. The nearest approach to a protective tariff is the seventh, because like protective tariff it is calculated to discourage imports and to induce intending investors to part with their money. In the case of a new and promising industry, especially if it happens to be one in respect of which there is keen competition with foreign industries, the factor that retards investment is the lack of confidence that the indigenous commodity will find purchasers. With a certain amount of guaranteed purchase this retarding factor will largely be minimised. The great advantage of all these forms of State assistance is that the knowledge that the Government is investing money on a business basis will encourage others to come forward with their investments. At present men are sometimes reluctant to invest money in an enterprise, even if they have the money and are willing to invest it on reasonable terms, because they have not the means of judging of the soundness or otherwise of a proposal regarded as business proposition. Government, before it either invests money in a concern or lends money to it or supplies machinery on the hire-purchase system, will, it may be hoped, assure itself that the proposal is reasonably sound; and the Government action will be a safe criterion by which private capitalists will regulate their own action. In every case in which the Government lends financial help to an industry it should, in my opinion, exercise a certain amount of supervision and control over the conduct of the industry. The best form of such supervision and control is by means of an independent audit. In those cases in which the Government provide a portion of share capital they should clearly have the same rights and privileges as other classes of shareholders.

I certainly think the Government can and ought to pioneer industries, but they should do so only in those cases in which an industry is likely to be extensively useful, in which it appears to Government to be promising, and in respect of which for reasons, which appear to Government to be unsound, private capitalists and companies have shown their reluctance to take the initiative. In such cases the Government may either hand over or close the factories as soon as the experiment has served its purpose and the shyness of private capitalists has been overcome. There is one thing which the Government should not do, and that is to compete with private enterprise.

Limitations to Government aid.

There is just one other question in regard to which I would say a word. I refer to question No. 14. I can think of no circumstances under which it can be the duty of the State to impose any limitation upon itself in respect of assisting an indigenous industry merely because it competes with an established external trade. As a matter of fact, nowhere is State aid more needed than in the case of industries which have to compete with an established foreign trade. Of course such aid would be protection simple and undisguised, and would belong to precisely the same category to which protective tariff belongs. But it was time the Government laid aside its scruple definitely in this respect. If India is to be an industrially developed country in the modern sense, the Government must be prepared to be frankly protective in every

case in which protection alone can enable any industry, for which the country has adequate facilities, to stand on its own legs. I am in favour of both a Director of Industries and a board of industries, the latter being a representative body. But I am of opinion that the Director should be selected from among men with actual experience of industries and should wherever possible be an Indian. In any case he should be a man with no racial or political prejudices and should be one who would make it his chief business to encourage and assist the employment of Indian capital under Indian management and control. The Board should have executive powers with budgetted funds, the Director should be its head, but he should have no power to override the decisions of the majority of the Board. The Local Government should have general control over the operations of the Board, but should, as far as possible, adopt a policy of non-interference except in cases of obvious misuse of power by the Board. Official organization

ORAL EVIDENCE, 13TH DECEMBER 1917.

Mr. C. E. Low.—*Q.*—You are speaking of the apathy and indifference of shareholders and their not taking care to appoint a competent board of directors with practical business experience: do you think in practice that shareholders really do appoint directors in that way?—*A.*—Not in the beginning, but at a subsequent stage they can if they care.

Q.—Do you think they actually do in the end?—*A.*—In a few cases in the Punjab the shareholders have exercised that power and they have been able to appoint.

Q.—You have no experience of any concerns of that sort outside the Punjab?—*A.*—No, I have not.

Q.—And you know no place where as a practical matter apart from the legal aspect of the case shareholders ever do really appoint their directors? Usually the directors are appointed by the promoters or their representatives? Is it not so?—*A.*—It is so.

Q.—You speak of the combination of lender and borrower in the same person: without mentioning any names, could you give instances?—*A.*—I do without mentioning names, there are mills, there are banks, there are factories, so many concerns in which there have been common directors.

Q.—By lender you mean what, lending company or bank?—*A.*—I mean the managing director being both the manager of the bank and of the company.

Q.—Do you know at all whether directors in industrial concerns in Germany control these industrial concerns completely? Do they really represent their banks on these concerns?—*A.*—So far as I know, at the stage when the industrial concerns wanted the amount the directors were appointed for the time being, that is so long as money was outstanding; what I mean is they were not directors from the very beginning.

Q.—They were directors *ad hoc*. Now in these particular cases in the Punjab these directors completely control both borrowing and lending?—*A.*—Yes.

Q.—There were large borrowings by the directors for their own private speculation: is it not necessary under the law for the directors to show themselves as borrowers in the company's balance sheet?—*A.*—Yes.

Q.—Was that done in such cases?—*A.*—In some cases it was done, in other cases technical devices were adopted so that the fact did not appear in the balance sheet.

Q.—What kind of technical devices do you allude to?—*A.*—I mean just floating a joint stock company and transferring the loan to the name of that company.

Q.—In which the real borrower had a leading interest?—*A.*—Yes.

Q.—Under the head "miscellaneous" I notice you give a number of causes, but you don't say anything about the important one. We have heard other witnesses say that these banks lent too much to a certain industry, namely the cotton industry?—*A.*—I do not think any one particular bank ever financed a single industry too much.

Q.—You do not attach much importance to that?—*A.*—No.

Q.—In speaking of the Punjab Co-operative Bank, you say "when the hour of trial came this bank failed to obtain the support that would have saved it from going into liquidation"; I suppose you mean that it could not obtain a temporary loan?—*A.*—Yes.

Q.—What was the nature of the security it was offering ?—*A.*—They had mortgage deeds, they had demand promissory notes. They did deposit the title deeds, which they had sent to the Bank of Bengal and the Bank of Bengal had practically got them endorsed in favour of them, and when they were sent to the head office of the bank the head office refused to grant the accommodation.

Q.—The Presidency Banks can only lend on the security of two names, they cannot lend on real estate ?—*A.*—Technically they cannot.

Q.—They want two names ?—*A.*—Practically one name in many cases, and the other is merely nominal.

Q.—But one has to be substantial ?—*A.*—If they had asked, probably that would have been complied with.

Q.—But did they put this alternative of security in Government paper ? Could they offer substantial security, security of real estate, mortgage deeds and title deeds and so on ?—*A.*—As a matter of fact the whole of these securities were placed at the disposal of the Bank of Bengal and it was the Lahore Office of the Bank of Bengal who selected the very best they wanted.

Q.—Had the Presidency Bank previously been ready to advance on the same class of security, do you know ?—*A.*—I know in one instance the Punjab Co-operative Bank had approached the Bank of Bengal for a loan a few months prior, and owing to the influence of an official they advanced a lakh of rupees.

Q.—The Co-operative Bank has been now completely liquidated ?—*A.*—No, not yet

Q.—How much has it to pay ?—*A.*—They have paid 8 annas to all the bigger depositors and to all the other smaller depositors up to Rs. 1,000 in full.

Q.—And there are still assets to be realised ?—*A.*—They have got assets of the value of 21 lakhs.

Hon'ble Pandit M. M. Malaviya.—*Q.*—How much still remains to be paid ?—*A.*—In the last balance sheet of 30th June the deposits amounted to Rs. 6,24,000, but just at present they have only to pay deposits of 5 lakhs.

Mr. C. E. Low.—*Q.*—You say if the Punjab had its own presidency bank that bank would have been more susceptible to local official influence than the Bank of Bengal proved to be. Do you think that the Bengal Government has any more influence over the Bank of Bengal than the Governments of Bihar and Orissa, of the United Provinces or the Punjab ?—*A.*—I believe the Government of India has a lot of influence over the Bank of Bengal.

Q.—I say Local Government ?—*A.*—I cannot say whether they have got any, but I believe it might be so because some of the local directors in Calcutta are on the board there.

Q.—Members of the Bengal Government ?—*A.*—Not members of the Bengal Government, but at least some of the non-officials are and they are in touch.

Q.—Have you no local directors here ?—*A.*—We have not any local directors.

Hon'ble Sir R. N. Mookerjee.—The directors are in Calcutta.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You say you are an auditor ; have you passed any examination ?—*A.*—I have not passed any examination.

Q.—How long have you been in business ?—*A.*—The business was started by my father, who was an accountant.

Q.—An English accountant ?—*A.*—No, he was an accountant in the service of the Government of India, and after he retired he started this business . Now I am qualified according to the new Indian Companies Act.

Q.—Then you say " the firm of Basant Ram and Sons of which I am the managing proprietor " : is that an auditors' firm ?—A chartered accountants' firm ?—*A.*—An accountants' firm.

Q.—We were told by one of the witnesses here that the present liquidation which is carried on is not satisfactorily done or less sympathetically done or else the shareholders would have got more dividends for their capital than they did : is it so ?—*A.*—Well, I would rather not pass any remark. I am myself a liquidator.

Q.—Then you say, you audit railway and other co-operative stores, what railways ?—*A.*—North-Western Railway co-operative stores.

Q.—Then you say " lack of support from well-established banks at the time of stress and want of mutual combination or co-operation." Do you think the failure was mostly due to the jealousy of the European banks ? Was that so ?—*A.*—No, I do not believe that.

Q.—Don't you think that confidence was lost by the public when they were rushing for their capital for the money deposited there ?—*A.*—Of course there was loss of confidence, and public wanted back their money.

Q.—And what was this due to, can you tell us the cause ? Was it due to the bad management of the banks, or owing to the opposition of certain people against the leaders in the press ?—*A.*—Well, it was due to bad management no doubt, but that bad management gave a handle to people to criticise.

Q.—To accentuate it ?—*A.*—Yes.

Q.—Then you say " indeed when we compare the recent bank and industrial failures in the Punjab with similar incidents in other countries we are astonished with the comparatively smaller proportion of cases in which the failures in our case were due to dishonesty or selfishness." Do you think that the failures were more due to inefficient management and lack of experience than to dishonesty ?—*A.*—Yes, in the case of the majority of them.

Q.—You desire that your province should have its own bank just like Bengal has got its own ?—*A.*—Yes.

Q.—Do you think if the Government starts another bank here on the same principle, under the Presidency Banks Act, that people would subscribe to the capital ?—*A.*—I think they will.

Q.—Of course there is no guarantee of Government you know except that they deposit a certain amount of money ?—*A.*—I know that.

Q.—You say, " I am in favour of both a Director of Industries and a Board of Industries, the latter being a representative body, but I am of opinion that the director should be selected from among men with actual experience of industries and should wherever possible be an Indian." How do you think the Director should be appointed ?—*A.*—Well, the director is always appointed by the Government, and the Government alone will make the selection for the Committee.

Q.—They should nominate them ?—*A.*—Yes, not elected.

Q.—Have you got any Chamber of Commerce here ?—*A.*—Yes, we have, but practically it is not doing any work.

Q.—It does not consist of commercial people ?—*A.*—A few, but there are hardly any meetings. They hardly take any interest.

Sir D. J. Tata.—*Q.*—Referring to the attitude of certain European banks towards Indian enterprises, you complain that they did not look with sympathy upon the efforts being made in the development of industrial enterprises ? Can you account for this attitude ? What is this attitude due to ? Was it actually adopted, or was it only a surmise on your part ? Can you give instances ? You say that if the European banks had been more sympathetic than they were, these failures would have been averted. Then you say : " The Presidency Banks could have rendered effective help and it must be said that they entirely failed to rise to the height of their duty. There is a widespread belief that this was due to the existence of a policy of discrimination in favour of Europeans against Indian enterprises ?'—*A.*—My experience is this, that when the banks failed some of the good banks, for instance the Punjab Co-operative Bank, could not get money ; but I know that in the case of a European bank when the money was needed the other European banks came to their help.

Q.—They did come to the help of the European bank ? If similar help had been extended to the Indian banks they would have tided over this difficulty and would have stopped the run. Did not the Indian banks work hand in hand with the European banks ?—*A.*—There was no co-operation whatsoever.

Q.—Do you think that the Indian banks were looked upon as rivals in business who might damage the prospects of the European banks ? Was that the reason ? Was there any chance of rivalry between the two ?—*A.*—There was to a certain extent, but not to a great extent.

Q.—But the Indian banks appeal more to the small investor, and the small man than the European banks do, which deal with the larger commercial bodies and

larger commercial men ?—*A.*—Yes, but so far as depositors were concerned the same classes of people go both to the European banks and to the Indian banks.

Q.—Same people go to both ?—*A.*—As depositors they do. If a man has something to deposit he sometimes likes to distribute it over several banks.

Q.—Isn't there also amongst the educated classes a distrust of the European banks ? Is there no feeling of that kind ?—*A.*—No.

Q.—Then what is this hesitation on the part of the European banks to help them due to ?—Simply trade rivalry ?—*A.*—Well, I cannot say exactly what was this due to, but the fact is there.

Sir F. H. Stewart.—*Q.*—How many members of your firm are there ?—*A.*—Now I am the sole proprietor. I have two Assistants.

Q.—Are they all qualified men under the new Act ?—*A.*—Assistants are not required to qualify under the new Act. The responsible part of the work is done by me.

Q.—You grant the certificates ?—*A.*—Yes.

Q.—Is there any system of training for auditors or accountants in this province ?—*A.*—No.

Q.—Any facilities for such training ?—*A.*—No. We had some colleges started by private individuals, but after some time the students got disgusted, and they left these colleges—for practically they were colleges nominally. The education imparted was not quite up to the mark, and since then we have practically none.

Q.—Do you know anything about the accountancy course recently started in the Bombay College of Commerce ?—*A.*—I know.

Q.—Do you think that is valuable ?—*A.*—I think it will be.

Q.—Would you encourage students to go there ?—*A.*—Yes.

Q.—Would they find employment readily ?—*A.*—I think the commercial people prefer to have qualified men rather than men who have had no experience.

Q.—Then you give instances of the causes of failures of banks some years ago ; would you add to the ones which you have given " want of provision for depreciation for bad debts " and so on ?—*A.*—I think I have said somewhere that adequate depreciation was not provided in certain instances.

Q.—Did you as auditor bring this want of provision to the notice of the directors ?—*A.*—Not only to the notice of the directors, but I mentioned this in my reports also.

Q.—Did you mention specifically in your reports that adequate provision was not made ?—*A.*—Yes.

Q.—Did you have occasion to refuse certificates altogether ?—*A.*—No.

Q.—Do you think that special banking legislation is necessary in India ?—*A.*—I do not think so.

Q.—Why do you think it is not necessary ?—*A.*—Well, even in an advanced country like England where there have been so many failures it is not found necessary, therefore I do not think such a restriction should be placed on Indian banking in this country when already we have got so few banks to finance industries ; if legislation is put in we will have finance only from European banks, there will be difficulty in having our own banks and it will be rather a restriction of banking business generally. I am strongly opposed to banking legislation.

Q.—But you are very anxious about industrial development, and banking facilities are very necessary for that purpose, and past experience in this province has proved that the banking facilities have not been what they should be : do you agree with that ?—*A.*—Yes.

Q.—You would not like to see a provision made for the future that the interests of the public should be safeguarded ?—*A.*—The interest of the public should of course be safeguarded ; we have had failures ; but they are not so many that we should take measures to stop banking entirely.

Q.—Have they not been so many as to destroy the confidence of investors ?—*A.*—Yes, the confidence of investors has been destroyed.

Q.—Do you think that special legislation would help to restore that confidence ?—*A.*—Confidence can never be restored by legislation. Confidence is a thing which should come gradually. No legislation can create it.

Q.—Do you think confidence is reviving ?—*A.*—Very slowly.

Q.—How will it be shown ?—By following the advice and example of a man who is trusted ?—*A.*—No. I see for instance that in the case of the Punjab National Bank the deposits are rising, that clearly shows that confidence is reviving.

Q.—Then you deal with the question of industrial education. You say it is not represented on the Senate of the University. Would you like to see commercial and industrial education separated from literary education altogether as far as possible ?—*A.*—Well, I would be glad to have a separate college of commerce here, and degrees of commerce introduced in the University.

Q.—What form would that take ? Would that simply be that the University countersigned the certificate granted by the College of Commerce ? You don't want that the University should hold any examination ?—*A.*—I do not think there is any harm if they have examinations. The college can be affiliated to the University.

Q.—Do you think that would be of practical value ?—*A.*—Yes, because a certificate from the University carries greater weight than a certificate merely from a college.

Q.—Is there any course of commercial instruction in the Punjab now ?—*A.*—At present there is an examination held which is called clerical and commercial examination, but that examination is not at all popular.

Q.—Who holds that ?—*A.*—The examination is held by the University.

Q.—Why is that unpopular ?—*A.*—Because the curriculum has never been revised, the text-books have never been revised, the present requirements have never been looked into, there have been no representatives of commerce up to the present on the Senate.

Q.—Do a considerable number of students take up that examination ?—*A.*—For the last 12 years I have been an examiner for that. In the beginning when I was appointed examiner the candidates were about 50 or 60, gradually they rose to about 150, but again within the last few years they have gone down to 60 or 70 ; that clearly shows that it is unpopular.

Q.—The reason you give is that the course is not up-to-date and not sufficiently understood ?—*A.*—Yes.

Q.—Do these students obtain employment readily after passing that examination ?—*A.*—To a certain extent, not very much.

Q.—Do you think it likely that a commercial course instituted and controlled by the University would be a practical success ?—*A.*—Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.*—According to the Companies Act if a director has any interest in any concern, he has to disclose that interest before he becomes a director, do you think that is a sufficient safeguard to avoid abuse ?—*A.*—No, because that provision is only so far as a private contract is concerned, but if a person is a director in two separate joint stock companies . . . .

Q.—He has to disclose that too ?—*A.*—Well, it is shown in the balance sheet that it is due from a company in which he is a common director.

Q.—As far as I know if a man is a director of two companies he has to disclose it before the directors of the second company ?—*A.*—He will merely say that he is a director.

Q.—If he takes any active interest, he has to disclose every item in which he is interested ?—*A.*—To a certain extent he has to.

Q.—If supposing in a case, A is a director of one company, he cannot become a director of another company unless he discloses that fact ?—*A.*—Yes, I think he cannot.

Q.—Do you think that the Act should be amended ?—*A.*—The Act has not been long enough in practice, and I think we should wait for some time and see how it works before making any change.

Hon'ble Pandit M. M. Malaviya.—*Q.*—In dealing with the causes of banking failures, you say that one of these was " their not taking care to appoint a competent board of directors with practical business experience." That would not apply, I take it, from your answers to other questions, to the Punjab Co-operative Bank ?—*A.*—I do not think so.

Q.—Nor would it apply to the Punjab National Bank ?—*A.*—Well, it will apply to the Punjab National Bank.

Q.—Do you think they have appointed men lacking in business experience ?—*A.*—I won't like to reply to that question, I think it might injure the institution.

Q.—You say here that " the board of directors had practically left the entire management in the hands of the Managing Directors or Managers without providing proper check or safeguards against abuse of power and authority." Are there any banks to which this remark would not apply ? I do not want the names of the banks which failed, I only ask if you can say whether there are any banks to which this remark would not apply ?—*A.*—There are banks to which this remark will not apply ?

Q.—Are they many ?—*A.*—Not many.

Q.—Could you mention some ?—*A.*—I think it is not desirable to mention all these things.

Q.—You could not say, or you don't want to say, to what banks this remark would not apply ? In this case you may mention every such bank, this won't hurt any bank ?—*A.*—It won't.

Q.—You see it is a sweeping remark, you have said that the board of directors have practically left the management in the hands of the managers. I want you to say whether there were some banks to which this remark would not apply ?—*A.*—To some banks it does not apply.

Q.—You don't want to name, you cannot name any such bank which had left the management to the managers "without providing proper check or safeguards against abuse of power and authority." You say that another cause of their failure was " the appointment of men as managers, agents or other officers in immediate control of business who had no practical knowledge or experience of the business." Up to the time when this crisis came in 1912 or 1913, was not the business of all these banks going on well and satisfactorily ?—*A.*—I do not think the whole thing went wrong in one year.

Q.—Are you not one of the liquidators of some of these banks ?—*A.*—I am the liquidator of the Punjab Co-operative Bank, and of no other.

Q.—Have you seen the reports of the liquidators of any other of these banks ?—*A.*—I have seen some of them.

Q.—Have they made this complaint that the management was entrusted to men with no practical experience of the business ?—*A.*—I think I read yesterday the evidence of one of the official liquidators saying that the management was entrusted to inefficient and incompetent persons.

Q.—Has it been said in the case of many banks or in the case of some only ?—*A.*—Well, so far as this point is concerned, in one case I have seen they have mentioned it, and in other cases they have not mentioned.

Q.—You have seen it mentioned only in one case. You say that in some cases they had vigorous canvassing for directorship : does that apply to many banks ?—*A.*—Not to many.

Q.—To one ?—*A.*—Two or three, not to many.

Q.—You say that managers had little or no practical experience of banking : is it the fact that the managers of many of these Indian banks were not empowered to carry on the business without consulting the directors generally ; that they used to hold directors' meetings to deal with important transactions ?

Hon'ble Sir R. N. Mookerjee.—*Q.*—Are you in a position to answer that question ? Do you know all the details ?—*A.*—Not necessarily.

Q.—Because you cannot possibly know the affairs of every bank ?—*A.*—There are so many.

Q.—That is a general remark ?—*A.*—Yes.

Hon'ble Pandit M. M. Malaviya.—*Q.*—I wanted to know whether you would qualify the general statement you have made ?—*A.*—There are so many banks every bank had many branches and the rules of one did not apply to another. There was not one fixed rule which was applied to all.

Q.—You cannot then say that your statement is generally true, you can only say that it may be true in some cases ?—*A.*—My statement is certainly true.

Q.—Then you say another cause of their failure was "slavish imitation of what was done by other banks irrespective of requirements and resources" Could you mention in confidence some of these banks which disregarded requirements and resources; later on, not now?—*A.*—I could give you innumerable instances.

Q.—Would you kindly let us have a little note, because these are facts which affect the future progress of banking here?—*A.*—Very well.*

Q.—As you have said yourself, we must know the causes of the failures before we can hope for any future progress?—*A.*—You will please give me a definite memo of what you want.

Q.—Then you speak of their "readiness to embark on speculative adventures of a dangerous character," could you also add some instances of that kind?—*A.*—Oh yes.

Q.—You say next that their 'authorised and un-subscribed capital was out of all proportion to paid-up capital:' let us take up the Peoples' Bank. What was the percentage of the capital that was paid up? Was it about 60 per cent?—*A.*—It does not necessarily mean that that remark applies to the Peoples' Bank. If you want to hear whether . . . .

Q.—I want to know about these particular banks. You admit that it does not apply to the Peoples' Bank. It had 60 per cent of its capital paid up?—*A.*—Yes.

Q.—I understand that the Punjab Co-operative Bank had 84 per cent of its capital paid up?—*A.*—Yes.

Q.—And the Punjab National Bank about 50 per cent, the Amritsar Bank about 60 per cent. and the Sind Punjab Bank about 60 per cent?—*A.*—The Sind Punjab is going on.

Q.—Very well, leave that alone. Therefore in these banks 50 per cent or more than 50 per cent of the capital had been paid up and in one 84 per cent had been paid up. So this remark of yours also would not apply generally to the banks here? It may apply to some?—*A.*—It does apply to some.

Q.—Then you say 'they were lending money on insufficient or no security.' Have the liquidators found that the securities cannot be realised, or does the fact that many of the banks are paying 16 annas evidence that those securities were generally good?—*A.*—In many cases there was practically no security.

Q.—But I want to know whether generally the security has been found to be sufficient or not, judging from the payments made?—*A.*—Well, if generally the security had been sufficient, probably there would not have been so much difficulty to raise money and to realise it.

Q.—Take the case of the Punjab Co-operative. You said they had excellent security and yet they could not raise money?—*A.*—I have said that the Punjab Co-operative Bank is one of the exceptions to the rule.

Q.—Another cause which you have mentioned was their 'lack of support from well-established banks, etc." I suppose you refer to the Presidency Bank; you have suggested that in your note later on?—*A.*—Not necessarily Presidency Banks. We had other banks also; they could if they wished have rendered help.

Q.—They did not help?—*A.*—No.

Q.—With regard to industrial failures, your knowledge of these is derived only from the auditing of their accounts; I take it that you have no personal knowledge regarding them?—*A.*—I have myself stated that I am not an industrialist.

Q.—You say "when we compare the recent bank and industrial failures in the Punjab with similar instances in other countries, we are astonished at the comparatively small proportion of cases in which the failures in our case were due to dishonesty or selfishness." Do you think that if there was such a bank as you have suggested, a provincial bank which would examine the cases of each of these banks and lend help, many if not all of these failures could be averted?—*A.*—Oh yes.

Q.—You think so?—*A.*—Yes.

Q.—You say further on: "it must be said in this connection that the attitude of high officials was all that it could be, but they were helpless." . . . . .

* Not received when going to Press.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Do you think that if a provincial bank was started all these failures would have been averted ?—*A.*—Many, if not all.

Hon'ble Pandit M. M. Malaviya.—*Q.*—Are you aware that after the failure of the Peoples' Bank some of the authorities at Lahore were approached and asked to help the other banks, and that they expressed their inability to do so ?—*A.*—Not within my personal knowledge.

Q.—You have said that " so far as the Presidency Banks are concerned there is absolutely no justification for such a policy for they are extensively assisted by the State," and you say just before the sentence which I quoted ' but they were helpless.' Did the Government put pressure upon the Presidency Banks to help these banks considering that they were extensively assisted by the State ?—*A.*—So far as I know some Government officials did try to get money from the Presidency Banks.

Q.—But they failed to move them ?—*A.*—The Government officials were more sympathetic.

Q.—Some of them ?—*A.*—Yes.

Hon'ble Mr. H. J. Maynard.—*Q.*—Is it the case that the Directors of a particular bank passed a resolution of thanks to a particular manager of a local European Bank ? Do you know of that ?—*A.*—I do not know of that.

Q.—Perhaps you don't want to mention names ?—*A.*—No, I do not know of any.

Q.—Was it the Punjab Co-operative Bank ?—*A.*—I do not know whether the Punjab Co-operative Bank passed a resolution of thanks for the manager of a European Bank, but I know that the Punjab Co-operative Bank was very much assisted by the Registrar of Joint Stock Companies then, and even to-day the managing director and the directors are very grateful to him for the very great assistance he tried to render them, and at one stage he got them a lakh of rupees which was at a previous stage refused ; but subsequently when they wanted a large sum of money the Bank of Bengal said they refused to give it.

Q.—Subsequently the Bank of Bengal refused ?—*A.*—Yes.

Witness No. 377.

Rai Sahib Ruchi Ram Sahni, M.A., F.C.S., *Professor of Chemistry, Government College, Lahore, and Fellow of the Punjab University, Lahore.*

Written evidence.

Introductory Remarks.—I should like to say at the outset that, whatever knowledge or experience I possess of the subjects of present enquiry has been acquired by me as a teacher of Chemistry of over 30 years' standing, as a member of several Industrial and Commercial Conferences and Committees appointed by Government and as Joint General Secretary of the Punjab Industrial and Agricultural Exhibition in charge of exhibits. In the last capacity, it was my duty to travel all over India and visit influential persons interested in industrial enterprises, and arrange for the collection of the best exhibits from each Province. In another connection I visited the principal Agricultural Colleges and Farms in the Bombay Presidency, the Central Provinces, and the United Provinces. This was in 1902 before the present Agricultural College at Lyallpur came into being. This tour occupied me for six weeks. A detailed Report was submitted to the Director of Public Instruction. I am specially interested in the development of chemical industries.

I.—Financial aid to industrial enterprises.

Capital.

Questions 1 *to* 6.—I have had no personal experience of the raising of capital for industrial enterprises. I believe, however, that, under certain guarantees provided by Government against risk of loss in recovering loans, there need be no serious difficulties in raising capital for small industries from private banks. If necessary, special banks for the purpose could be started on the joint stock principle with or without financial assistance from Government. The nature of the security and protection which such banks should enjoy is indicated in the following rough scheme :—

(1) The bank should advance not more than two-thirds of the total capital required for the buildings and machinery, at a fixed moderate rate of interest, say, 6 per cent, such advances being made for a period of from five to ten years. The buildings and plant should be insured against accidents,

(2) The promoters of the enterprise should find the remaining capital required for buildings, plant, stock of raw materials and working expenses.

(3) A law should be enacted making it illegal for the promoters to mortgage, sell or otherwise dispose of the plant or buildings without the permission of the bank, with the additional provision that, as regards the buildings and machinery, the bank must have the first claim. In case of non-payment of the loan in accordance with the terms and conditions previously agreed upon, the bank must have the right to sue on unstamped paper besides enjoying other legal facilities.

I believe that, equipped with the facilities thus extended to them, the proposed Industrial Banks will be able to attract a larger share of the loanable capital in the market.

I am not in favour of direct bounties or subsidies being granted to industrial enterprises, but I would strongly urge the organisation of a Sugar Department with the following objects :—

(*a*) The special encouragement of cultivation of suitable varieties of sugarcane and sugar beets ;

(*b*) the purchase and transport of the cane to certain centres ; and

(*c*) the manufacture of sugar and allied products under Government management for a period of ten to fifteen years. So far as this Province is concerned, Jullundur and Lyallpur would be suitable centres.

The Sugar Department will also encourage the cultivation of beet root and arrange for the extraction of sugar in suitable areas. I believe there are many tracts in the Punjab which are eminently fitted for beet root cultivation and the manufacture of sugar therefrom. Outside the Punjab, parts of Kashmir seem to be ideal spots for the growth of beet root. A suggestion to the enlightened ruler of the State will, I believe, be welcomed, the more so as Kashmir at present imports from abroad every ounce of sugar that it consumes.

Considering the importance of building up the sugar industry in the country, in my opinion, encouragement might be given to sugar cultivation by reducing the amount of land revenue charged from growers of sugarcane.

I mention the Sugar Department partly as an illustration of the form State aid should take and partly because of the importance of the sugar industry itself. Similarly, a Paper Department might be organised ; for this again Kashmir offers special facilities.

I attach much importance to clause 5, sub-clause 5, but the assistance thus afforded would be of limited value, unless special facilities are provided for the *selection* of machinery. To a certain extent, and specially in the case of well-known standard machinery, the difficulty can be removed by arranging for the stocking, for purposes of selection and purchase, of various kinds and sizes of lathes, drilling, planing and shaping machines, saws and hammers, oil engines and ordinary tools and plant of an improved kind. These should be offered for sale at fixed and reasonably moderate prices. What is needed is to make these common machines so readily accessible to the ordinary workmen, mechanics, and foremen as to encourage them to study their requirements and make their rough estimates without special expert advice or lengthy correspondence. In this manner, the bolder and more enterprising spirits among them will be induced to set up small factories of various kinds either as individuals or in co-operation with others. I understand that in Japan the system has proved very helpful both as an instrument of general education in the use of machines and as an encouragement to the starting of small workshops.

Pioneer and demonstration factories.

Questions 7 *and* 8.—India is so very backward industrially that I am sure fifty different industries could be started in each Province with fair promise of success. But the people lack technical knowledge and financial and other facilities. I should specially like some chemical industries to be started by Government. I would recommend the manufacture of alkalis, porcelain and glass-making and glass-blowing, and tanning. It is not necessary for a good start to invest more than 1 to 2 lakhs in any of these concerns, and a fair beginning might, in many cases, be made for purposes of demonstration with a very much smaller capital. As soon as the factories become going concerns and their commercial success is assured, private companies will be coming forward to take them up.

I should like only very large industries, such as the Sugar Industry, to be in the hands of Government for a period longer than ten years.

Questions 9 *and* 10.—Banks should offer special financial facilities by collecting the cost of machinery and material required for industrial concerns six months after the presentation of the invoices.

Co-operation in industrial development.

Questions 11 *to* 14.—The rapid development of Banking in the Punjab during the past few years shows that there is no lack of the co-operative spirit in the people, and the existing inactivity is, in my opinion, largely due to ignorance and the consequent want of confidence.

II.—Technical aid to industries.

Industrial research and industrial surveys.

Questions 15 *to* 27.—I entertain the highest possible opinion of the value of scientific research for industrial advancement. But as I have already indicated above, we here are so backward that no research either in England or in India is of much practical value to us for many years to come. Nor am I in favour of further industrial surveys being undertaken at present, though I am fully conscious of the many hitherto undiscovered industrial resources in this country.

In my judgment, the immediate usefulness of research is of a limited character, and more attention should be given to industries that can easily be developed by means of known products and processes.

When, as is the case at the present time, articles of every-day use are selling at ten times their normal cost, one can easily see that it is not protection, nor research that we want badly but expert knowledge and facilities for utilizing that knowledge when acquired. In my opinion, even in the midst of the war, steps should be taken to improve the existing state of things, so that we may be ready to start a few industries at least soon after the return of peace conditions. I think this is only possible, if the present Industrial Commission will issue an *ad interim* report and urge upon the Government to take it into consideration *at once*. We have already lost much valuable time.

III—Assistance in marketing products.

Commercial museums and exhibitions.

Questions 28 *to* 39.—Commercial museums and exhibitions are certainly helpful in bringing the manufacturer and the seller into touch with each other, but the small trader does not at present take full advantage of them, and, as I have mentioned above, there are, at present, no large industries in the country. There should be one commercial museum in each Province and it should be managed by a Sub-Committee of the local Corporation or Municipality. It should be the duty of the Committee of Management to circulate a list of the exhibits with some important particulars of the principal trades in the Province. One day in the month may be fixed specially for the trade visitors when the officer in charge should be present to give fuller information regarding exhibits in which individual traders may be particularly interested. Manufacturers may, if they choose, also attend on any of these occasions or send representatives.

The exhibitions can do a lot of good work in the same direction if—(1) they are organised on a small scale, (2) they are held frequently in different centres, (3) special arrangements are made for bringing the manufacturers and traders into touch with each other. Like the museums, the exhibitions should be organised by local bodies through a special Sub-Committee, which qualified non-members may be invited to join.

Indians of commercial experience should be largely appointed to the higher posts in the Government Departments for the purchase of stores and some of them should visit the manufacturing centres in this country. A number of trade representatives in Great Britain and the Colonies should also be Indians.

I press the claims of Indians not only because they will be better acquainted with the industrial needs and conditions of this country but also because the experience and special knowledge which they might acquire during their period of service would be of use to the people even after their retirement.

V. & VI.—Training of labour and supervision and official administration and organisation.

Questions 44 *to* 62 (*a*).—The lack of adequate spread of primary education is at the root of a great deal of the industrial backwardness of the country. Besides, the present system of education—primary, secondary and collegiate—is too literary and unpractical. I have no hesitation in saying that so far as the industrial interests of the country are concerned, it is doing a great deal of harm.

There are no industrial schools worth speaking of in this Province with the exception, perhaps, of only one or two. Of technical schools there is not a single one in the province.

Several official Industrial Conferences have already suggested the establishment of trade schools teaching certain crafts or industries in particular centres, but so far the Dane Weaving School at Ludhiana is the only one which has been opened, and for certain reasons this has not done as much good as it should otherwise have done.

The "urgent recommendations" of the Conference on Commercial Education held under the chairmanship of Sir D. P. Masson in 1905 should receive early consideration.

The question of the administration of industrial and technical schools is not a pressing one in the Punjab. We should first have the schools and any kind of administration will do for a long time to come. Here, again, it would be a distinct advantage if qualified Indians are associated in the organisation and control of nascent industries in the Province.

I believe that the recommendations of the Punjab Industrial Conference held in 1911 included the establishment of a Technological Institute at Lahore, but in any case, I submit, that such an Institute should be established in the Punjab at a very early date.

Question 62 (*b*) and 62 (*c*).—This is a most important question. The Punjab Department of Industries has already done something in popularising the use of the handloom in rural areas. **Cottage industries.**

What is wanted in my judgment is—(*a*) the training of artisans, (*b*) the standardization of mechnical appliances, material and finished products, (*c*) facilities for the purchase of the appliances and material required as well as the sale of the finished products. I will explain what I mean more fully with reference to the extension of the handloom industries.

I would have half a dozen different kinds of standard handlooms numbered 1, 2, 3, etc. No. 1 may be of a suitable kind for producing coarse *dhotis* of a standard size in which a standard quality of yarn is used. Similarly, No. 2, will be specially suited for producing a *lungi*. No. 3 may be for turning out handkerchiefs. No. 4 for silk cloth of a standard width and quality.

These handlooms may be made by private firms and sold at fixed prices. Similarly, the standard yarn, plain as well as coloured, required for the several products should be available for sale in each large village at fixed prices through the existing village Co-operative Societies or some other convenient agency. The same agency should purchase the outturn of looms at fixed prices and supply them to the trade in larger villages and towns.

The same system, with the necessary modifications, might be adopted with the following industries and others which may be readily suggested :—

(1) Weaving of *niwar* and tape and making of ropes of superior qualities of cotton, hemp and other fibres. Weaving of durries and towels.

(2) *Hosiery*—Socks and underwear (cotton, silk and wool). For this purpose a central depôt where the necessary machinery may be obtained at fixed prices will have to be organised. This industry is suitable for the larger villages only.

(3) Wire-matting for sanitary beds.

(4) Glass-blowing (in the sub-montane districts only). Other articles of glass not requiring the operation of blowing. This will require a small class where artisans for different classes of work may be trained. (Here again I would emphasize that the production of only standard articles should be encouraged.)

This list can easily be extended and the different districts will find it easy to discover for themselves which industries will suit each of them best.

VII.—Organisation of technical and scientific departments of Government.

Questions 63-81 (*a*)—As I have already explained, India is not yet ripe for taking advantage of Research Institutes for industrial purposes. We do not want "Technological

Research Institutes" (*Q.* 71) as much as a Technological Institute in each Province for training managers, foremen and superior workmen, for industries. Research will naturally follow the establishment of schools and industries.

Questions 74 *and* 80.—I have dealt with these before.

VIII.—Collection and distribution of commercial intelligence.

Very valuable information is doubtless being collected and published by the several technical departments of Government, but I am afraid very little use is being made, or, in the existing circumstances, can be made of it. I do not think wider dissemination of the information through the various vernaculars will be of much use at the present stage of industrial development.

Technical scholarships.

These should be awarded only to persons who furnish adequate guarantee that they would on their return be able to find sufficient capital to start the industry for which the scholarship was awarded. In several cases the scholarship-holder has not been permitted to obtain access to works and has consequently returned to this country without any training whatsoever. I would recommend the adoption of what, I understand, is the Japanese system, *viz.*, that large manufacturing concerns which supply their products to India should admit a certain number of scholars from this country to their works as a condition for the continuance of Government patronage.

ORAL EVIDENCE, 13TH DECEMBER 1917.

Sir D. J. Tata.—*Q.*—In section II you say: "I entertain the highest possible opinion of the value of scientific research for industrial advancement. But as I have already indicated above, we here are so backward that no research either in England or in India is of much practical value to us for many years to come." Would you explain?—*A.*—I have explained it. I want for the present to limit ourselves to known processes and products. So much has already been done that more time need not be lost in carrying out further research. There is such a vast scope for industrial development on lines that are known, with processes that are well known, with products that are available that we need not give more time to further research before these industries are started. I fear that if further researches are undertaken, the plea will be advanced that this thing is being investigated and that thing is being experimented upon, and in this way the industrial development will be retarded rather than accelerated. As I have said in my written statement I am not against research work, but what I am really against is that the research work should stand in the way of early steps being taken towards the industrial development of the country. Industrial surveys have already been undertaken in most provinces, and we have now a large mass of information at our disposal. While the whole world has been doing ag reat deal in the way of industrial development, there seems to be no reason why we cannot start something on similar lines. The subject of industrial development has been discussed by several successive Conferences, Committees and Commissions during the past 37 years, but nothing practical has come out of these discussions and recommendations, and I should be very sorry if in the name of research and industrial surveys more time is lost.

Q.—If the information available is not utilised that is not the fault of research work?—*A.*—I have said that.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You say "I do not think wider dissemination of the information through the various vernaculars will be of much use at the present stage of industrial development." Do you think that the literature on industries ought not to be given in the vernaculars to the people?—*A.*—I go much further and I hold that the whole educational system should be through the vernacular, both industrial and literary. But at the present time, there are no industries in this province worth speaking of, the people are very backward in general education and, in consequence, they cannot understand even the bulletins and monographs that are available. I have myself translated some on agriculture into Urdu but the people do not understand and appreciate them.

Q.—What people? Agriculturists?—*A.*—Yes, I mean the common agriculturists in this province cannot make much use of vernacular translations because of their defective general education. The same remark holds good of bulletins in all industrial subjects. I am now merely illustrating my view with reference to agriculture.

Q.—You talk of the farmers and the cultivators?—*A.*—Yes.

Q.—But the poor people are not taught even the vernaculars. How are they to read in vernacular ? That is their difficulty.—*A.*—Quite so, they are very backward. That is my whole point.

Q.—With regard to people in big cities like Lahore and other places, if you give the information in vernacular to shroffs and other businessmen who do not know English they will be better able to make use of it.—*A.*—If these bulletins are to be of any value, they must be written on scientific lines and must deal with scientific principles. But the general level of education of the common people is so low that they would not benefit by them. What I want is there should be arrangements for a regular course of instruction through the vernacular and then they would benefit.

Sir D. J. Tata.—*Q.*—If they cannot understand much English, do you think there are enough scientific terms in the vernacular to make the things very clear ?—*A.*—Yes, if there is a regular course of instruction. I have tried it myself. I am not merely giving an opinion. I am expressing my confirmed conviction. I have given popular lectures in the Punjab and can say that the people can understand you if you explain the things to them in a popular way. The terminology will grow in the vernacular as it has grown in European languages.

Mr. C. E. Low.—*Q.*—With reference to what Sir Dorab Tata was asking you on your statement : " We here are so backward that no research either in England or in India is of much practical value to us for many years to come," do you mean that to apply to the whole of India or to the Punjab only ?—*A.*—I am speaking mainly about the Punjab and not the whole of India. I say that sufficient research has already been done along several lines for various industries to be started all over the country without further delay. My point is that the industrial development of the country should not be allowed to wait on the carrying-out of research whether in India or elsewhere.

Hon'ble Pandit M. M. Malaviya.—*Q.*—I take it that you want Government to provide banking facilities, to provide educational facilities, to give patronage to goods manufactured here and also protection to such goods. That is what it comes to ?—*A.*—Yes. Certainly.

Q.—You think that with such aid from Government, industries in the Punjab will have a bright future ?—*A.*—I believe a very, very bright future. I am a great optimist in that respect.

Q.—You think that the natural resources of the province can be usefully and beneficially worked up in the province if such facilities are provided ?—*A.*—Government reports show that it is so.

Q.—What are the particular industries that you would recommend to be specially attended to ?—*A.*—I have named certain chemical industries.

Q.—You think there is great room for expanding the chemical industry in the Punjab ?—*A.*—Yes. I have specially mentioned beet root, paper pulp, wood pulp, mineral acids and alkalis.

Q.—Are you making any stationery in this province ?—*A.*—No.

Q.—Have you any factory for it ?—*A.*—No.

Q.—Do you think there is room for that here ?—*A.*—Some people have lately started making inks. I have just now one man in my mind. He gave up Government service where he was getting something like Rs. 30 or 40, he worked in the Government College laboratory for a few months, and he is now making an income of Rs. 300 or 400 a month by making and selling inks.

Q.—Would you wish Government to provide industrial and technical education by one provincial college, or by a provincial college, and a system of schools in districts where particular industries would be taught ?—*A.*—I believe that the whole system, if you would allow me to say so, requires remodelling, the whole system of education. I have purposely put that in that strong form to attract attention.

Q.—You say that the education given, primary, secondary and collegiate, is too literary and unpractical, and my question is meant to ask you in what particular directions

you would wish the system to be modified with a view todivert the energies of the youths of the province to profitable industrial pursuits ?—*A.*—In the first place, I would begin from the beginning. In the primary schools I would give the boys along with the ordinary instruction in the three R's, something to do with their own hands. It might be a school garden attached to the school, or some drawing, or some clay modelling and so on, the object being two-fold, one training the hand and the eye and the other, the equally important work of familiarising the student with manual work, and teaching him the dignity of labour. The object is not to teach trade there. Going higher up to the secondary class, I would have several types of schools.

Hon'ble Sir R. N. Mookerjee.—We are not dealing with the question of general education.

Hon'ble Pandit M. M. Malaviya.—*Q.*—Would you introduce industrial schools ? At what stage ?—*A.*—At the secondary stage.

Q.—Are the boys to be trained in the elementary schools ordinarily and then put into the industrial schools ?—*A.*—With just that preparation for industrial work that is, hand and eye training.

Q.—And then you would have these industrial schools scattered in the districts ?—*A.*—I would have them scattered wherever there are ordinary schools.

Q.—And you would have a college at the centre of the province where higher industrial education would be given ?—*A.*—I might explain a little further. I should like to have a college with, say, three sides. You may have separate colleges, a commercial college, a college for something that leads to mechanical engineering and civil engineering and things of that kind, and a college that leads up to chemical technology. They may be in different places but it would be more convenient to have them in one place if other considerations allow. That is a matter of detail.

Q.—Do you think that students will be attracted to a college for electrical engineering here ?—*A.*—I believe there will be a rush. It will be difficult to provide room for all the students.

Q.—And also for mechanical engineering ?—*A.*—Yes.

Q.—And for chemical technology ?—*A.*—Yes.

Q.—You think that many of our young men who go to the bar at present will be diverted to these channels ?—*A.*—I am quite sure of it.

Q.—Supposing you do not have all the three branches combined in an institute such as you have suggested, do you think there is a necessity in this province for a college of commerce and for one of technology ?—*A.*—I would start with a college of technology, but in the lower classes I would give just a little training in accountancy and banking and a little economics up to our intermediate standard. I might mention, and I have referred to it in my written note, there was a conference on commercial education appointed by Government in 1905. I was one of the members and the chairman as one of our very best businessmen. That conference in 1905 recommended that an Institute of Commerce, teaching up to a standard equivalent to the university Intermediate, should be started immediately. I think the conference called it an " urgent necessity." That recommendation remains where it was.

Q.—You have mentioned that in your note ?—*A.*—Yes, I have.

Q.—You think that there should be first a technological college and then a college of commerce ?—*A.*—Yes.

Q.—Are many of your students going to foreign countries to acquire technical education ?—*A.*—Some even go without any money and go and earn their living. In America I know of several students who have gone and worked, or intend to go and work as private servants for earning their living.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You talk of academical knowledge and what about the practical side ?—*A.*—I was going to develop that side.

Q.—You want that workshops ought to be there in order to teach them ?—*A.*—Without industries, the technological institute will be of no value, and, in fact, industries must precede technology. Industries should be there. Each one should precede the other ; it is like the hen and egg puzzle. If you want to start with one, I would start with the industries and not a technological college because it is in the former that practical training ought to be given to the students. A better course would be to start a technological institute with demonstration factories attached to it.

WITNESS No. 378.

MR. PETER CARTER SPEERS, *Professor of Chemistry, Forman Christian College, Lahore.*

WRITTEN EVIDENCE.

What I shall have to say, is based on my experience with Indian students, with assisting certain manufacturers with technical advice : on a certain amount of knowledge of technical training as carried out in America, and of manufacturing conditions in America.

Financial aid to industrial enterprises.

It is my opinion that Government could greatly assist industries already started, and in certain cases, proposed industrial undertakings by loaning money to them, subject of course to more or less careful supervision of the use to which the money is put in the industry. This would imply, in the case of existing industries, a careful examination by Government of the plant of persons asking for such loans. I should say that the main requirements for granting such loans should be (*a*) the importance of the industry to the country, (*b*) the energy and ability of the men in charge of the work, (*c*) the likelihood of the success of the enterprise if carried out properly, rather than any great emphasis on collateral. In the case of proposed enterprises, it should be given only to men of experience in the line of the proposed industry, and of proven ability and energy. I should say that these loans should be given at a fair interest rate. Unless the men carrying out an enterprise have experience and energy no amount of Government aid will help to put the scheme on its feet.

Money grants-in-aid, bounties, guaranteed dividends, etc., all tend to make the enterprise dependent on some outside body for the driving power necessary for success. Unless those undertakings and enterprises have the necessary driving power and initiative within themselves, they will not make a success of the scheme. To be successful, an enterprise must be able to fight for its place. It seems to me that anything but loans at interest, with technical assistance if possible, will tend to foster dependence rather than sturdy growth.

Pioneer factories.

Pioneer factories should be undertaken not as purely Government concerns, but rather as private concerns, backed by Government, with capital loaned at interest, and help in getting the necessary machinery.

Pamphlets dealing with definite industries, showing the raw materials necessary, their cost and sources ; the machinery necessary, approximate cost, and firms from whom it may be obtained : output and cost of manufacture, and selling price and available market for the product, would be much more useful, as pioneering agents than costly factories run by Government.

Technical aid to industries.

A great deal of help can be given by Government experts in a purely advisory manner. Visiting factories, at the request of the management and pointing out wherein the process might be improved, and advice as to sources of published information, and better methods, new sources of raw materials, and available markets, etc., would be a legitimate service in such matters. If the expert is to be lent to a private concern, it should be only when that concern pays to Government either all or the larger part of the expert's salary for the time loaned, with perhaps some sort of bonus scheme for the expert.

Demonstration factories.

Demonstration factories, if run as part of a technical institute, would be of great help in the better development of a large number of industries, as well as the establishment of new ones for India. Oil refining, and products from oil, alkali by the Solvay process, contact sulphuric acid, leather finishing, dyeing, and others would be greatly benefitted by this sort of thing. In certain of the technical institutes in America, this kind of training is being given very successfully. For example, Pratt Institute in Brooklyn, New York, gives a most excellent course of this variety. The actual training consists of the working in the institute of a number of small unit factories. This sort of thing would seem to me to be by far preferable to the establishment of distinct factories here and there through the province, for this or that industry. In such an institute the training can always be available. In demonstration factories proper, it will only be available freely for the space of years before the factory is closed or turned over to a private concern. It would be much easier in such a scheme also to bring out the inter-relation of different industries, and enable the men studying any particular industry, at the same time to become somewhat familiar with the industries on which his particular one is dependent either for raw materials, or for marketing raw materials. The scheme being undertaken by the Punjab University and being worked out at present by the Forman Christian College, is along this line. Small plants will be set up and will actually manufacture a number of different things on a small factory scale, thus enabling the men not only to see how a process works, but also to experiment with the machinery and reactions involved.

This would not be possible in a demonstration factory, being run on a commercial basis. A demonstration factory not run on a commercial basis would of course be valueless.

It seems to me that the biggest need at present is not a lot of very advanced research on this problem or that, but the actual training in the fundamentals necessary to operate a factory properly. Such training can be gained or should be gained in this country, and for some time to come, probably always, research in the matter of the actual manufacturing processes should be carried out in this country. The Imperial Institute could be of great service in research on such matters as the availability of Indian materials for use in other countries, but for working out processes, overcoming difficulties met in manufacturing, work in this country alone will be valuable.

Training of labour and supervision.

Lack of primary education in itself does not very greatly hinder industrial development. While primary education would without doubt help greatly, still it would do so mainly as the foundation for a higher education. A better education than merely primary education is necessary to greatly improve the labourers' efficiency.

It seems to me that the establishment and development of industrial schools is of far more importance than a scheme of apprenticeship. Apprenticeship systems are bound to limit an industry very greatly, for they can at best provide for the training of a very few men, while industrial schools can provide for as many as are needed. If some scheme could be worked out here whereby the men studying in industrial schools would have access part of the time to actual factory work, it would be an advantage. This would however be rather hard to accomplish. The best scheme in my opinion is the industrial school made up of a number of small factories.

If it were possible to have a joint board to control the industrial schools, it would probably be better than having either the Education Department, or the Industries Department to control them. If the industrial training can be given as a part of a man's regular school or college training, so that the men being trained would not have to devote several years to it after their regular college or school work is finished, it would greatly increase the numbers of men going in for it. To be a part of the regular educational system, it should of course come under the Education Department, but since this department cannot be in as close touch with the needs and opportunities of the industrial world as the Industries Department, the latter should also have a certain control over the work, Schools controlled by the Industries Department alone would lack the connection with the regular educational system which is in my opinion necessary to get the best men to take the training.

If the present system of Government scholarships could be extended, and somewhat altered, the question of foreign training for the men in charge of industries could be helped. These scholarships should be made available to those alone who have had actual experience in this country, of the work for which study abroad is to be undertaken, and have proven their initiative and resourcefulness. Further, these scholarships could be made much more valuable, were the men given them more closely directed in their work by Government. While recieving such scholarships the men should be directed by Government, as to the place where they should study, and the work they should do. Particularly do such men require help in being placed in factories at home for the really valuable work that has to be done. Training abroad, without first having experience in this country, is likely to do more harm than good, for the men do not realize the conditions and difficulties they have to face, and will not pay particular attention to those things in their study abroad. Further, they are likely to come back with ideas altogether too large, having studied only going concerns, which have passed the initial stage, and will get the erroneous idea that they can start an industry full grown, immediately. The result is of course failure, and the discouraging of others who might have taken up the work on a small scale and made a success of it.

In the matter of research, the best scheme I know of, and which would be applicable to this country, is the scheme in use in the University of Pittsburg, U. S. A., started by Professor R. K. Duncon, and described in his book "The Chemistry of Commerce." By this scheme, a company with a certain problem to be investigated, pays the University a certain sum, for a fellowship for a year or two years. The Director of the Department selects the man who in his opinion is most likely to succeed with it, and puts him to work on the problem, in the University Laboratory, and under his direction. The money given by the company goes as a stipend for this man. There are other conditions, whereby both the company and the actual investigator co-operate, to each others advantage. With proper technical schools, this same sort of thing could be undertaken to advantage in this country.

Technical schools should, it seems to me, be separate units, though making public the results of their work, for other technical schools to profit by. A big system, with Central Research Institute, etc., etc., is likely to be so unwieldy that the man actually wanting help would not be able to obtain it easily.

To sum up, it is my opinion, that Government can help to the best advantage, by—

(1) loaning money to enterprises already started, and in need of expansion; this to be done only after the approval of the enterprise by Government experts, and accompanied by Government help through its experts acting in an advisory way only;

(2) the establishment and development of industrial schools of the type suggested, namely, a group of very small factories established for teaching only, but working under commercial conditions as far as possible;

(3) the extension of the present scheme of Government scholarships, with the limitation of actual experience in this country for those to whom scholarships are granted, and greater direction of the scholars while studying abroad;

(4) in general making an enterprise pay in some way for the help given.

ORAL EVIDENCE, 14TH DECEMBER 1917.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Under the heading of training of labour and supervision, you say, "The best scheme in my opinion is the industrial school made up of a number of small factories." Are these factories for educational purposes or should they be run on commercial lines?—*A.*—Possibly a combination of the two. I mean they should be primarily for the educational side of the thing, but they ought to be able to run on commercial lines. They may not absolutely pay for themselves, but practically they should.

Q.—Would it not interfere with private enterprise?—*A.*—They would be so small that I do not think they would. For example, if you are working on an oil industry and turning half a ton a day that would not be sufficient to interfere with any private business, but would be sufficient for the training of the men who would be studying in that industry.

Q.—About your suggestion in the next paragraph that these industrial schools should be controlled both by the Education and the Industries Departments, don't you think that it might create friction between the two departments?—*A.*—If there was a common board between the two to control it, I do not think it would meet with much friction. It is very necessary to have the educational side in connection with the regular educational system.

Q.—By industrial schools you do not mean a technological college?—*A.*—I practically mean that.

Q.—You do not mean that in every province or every division there should be a technological college?—*A.*—No. My idea of an industrial school will be one in which the students take practically all the subjects that are ordinarily taken in an ordinary school and along with that, they take a certain amount of industrial training. If a man has only industrial training he is not worth very much unless he has had the other training at the same time.

Q.—That education seems to me would be a sort of primary education, and don't you think that if you have two departments to manage one school there will be friction?—*A.*—I think it is necessary for the man to have more than primary education. It depends upon what sort of people you are training. If you are training only workmen then it would be very much simpler.

Q.—Your scheme is both for the workmen and the better class of men?—*A.*—I have nothing to do with the artisan class. I am dealing with the better class of men. I think that man should have passed one of the regular educational examinations. It will depend upon the nature of the school. It would be at least F. Sc.

Q.—What will be the curriculum of this school?—*A.*—That would combine both, certain of the subjects that are taught at present in B.A. or B.Sc. as well as distinct industrial training.

Q.—At what age would the boys be able to go to that school?—*A.*—18 or 19.

Q.—If they come to that school at 18 or 19, after two or three years' theoretical training they would be 21 or 22, and they would have to put in practical training in workshops ?—*A.*—Our idea is to have the actual training going during those two or three years.

Q.—If you put them in the workshops they cannot possibly be in the college ?—The workshop will be a part of the college. They will be actually doing these things on a more or less commercial basis in the college.

Q.—In England and other places these lads are sent for practical training when they are 16 or at the utmost 17 because the parents think that that is the proper age for them to have that training ?—*A.*—You mean the workmen.

Q.—All the big engineers who come over to this country, mechanical engineers, they begin their practical training just after the school age, about 16 or 17 ?—*A.*—They usually begin after they have taken their B.A. They may take civil engineering.

Q.—You are quite right about civil engineering; but what about mechanical engineering ?—*A.*—The mechanical engineer, the civil engineer and the chemical engineer are all about the same. They will take first of all a two years' more or less general training in their college course and in the last two years they have practical training.

Q.—We have received evidence from several experts to the effect that there are two classes. One class goes to the college first and that has not so much practical training and their work is to go and teach. But you want in India primarily men who can work engines, or work as foremen, that is practical mechanical engineers ?—*A.*—The man who is going to do that must be well trained in the whole thing in the first place. A man to be a good foreman cannot be without education.

Q.—He must have some knowledge before he goes there. All these mechanical foremen, managers, loco. superintendents, they start life in exactly the same way. They go to the shops at the age of 16 or 17 and do practical work and attend evening classes and as they learn both the theory and practice they gradually improve their knowledge ?—*A.*—What I think is this, that, if the training is only dependent upon going to the shop and developing there, it limits the number of men who can do it. Only those who can go to the shops and do the work there can possibly get the training.

Sir F. H. Stewart.—*Q.*—What is your Indian experience ?—*A.*—Very small. I have been only three years in the Punjab now.

Q.—You refer to a scheme just being undertaken by the Punjab University and being worked out by the Forman Christian College. Is that college affiliated to the University ?—*A.*—Yes.

Q.—And who bears the expenses of the scheme ?—*A.*—Our college is at present bearing the expenses entirely.

Q.—It is self-supporting ?—*A.*—What I hope for is that it will be self-supporting or practically so.

Q.—Your idea is that these small factories would be almost entirely for teaching for educational purposes ?—*A.*—Yes.

Q.—Is it not possible that they might be rather misleading and that they might not give a correct idea as to whether an industry would pay on a commercial scale ?—*A.*—They might possibly, but if they were in charge in every case of a foreman or a man who would be a teacher and not a student, then I should think that he could use the students as workmen and show how the thing could be worked on a commercial scale.

Q.—You would say that if these small factories show that a process could be worked successfully on commercial lines, *a fortiori* it would be much more clearly successful on a larger scale ?—*A.*—Yes.

Q.—With reference to the pamphlets that you recommend, do you think that they would be widely appreciated and read ?—*A.*—From the experience I have had with the students I certainly think that they would be.

Q.—These again are for the more highly educated ?—*A.*—Yes.

Q.—You do not recommend that they should be published in the vernaculars ?—*A.*—I do not think so because practically all your information is published in English.

Q.—How would you distribute them ?—*A.*—Through colleges, through the Industrial department or the Commercial Intelligence department.

Q.—With regard to the experts' services you say that they should be loaned to private concerns which would pay to Government either all or the larger part of the expert's

salary for the time loaned. Are the results of the expert's work to be published ?—*A.*—If the private company was paying the salary of the expert I think they ought not to be published if he has worked particularly for that firm. If he went to another firm he should be quite at liberty to repeat the same work in that firm.

Q.—These experts will be Government servants or public servants, and don't you think that the work should be made known at any rate after a certain period ?—*A.*—Yes.

Q.—After one year or two or three years ?—*A.*—Or even longer.

Q.—With regard to the Pratt Institute which you mention can you give us more details ? Do they take apprentices ?—*A.*—No. They practically don't have the apprenticeship system at all, and the men that come in there are of two classes, those that finish their high school course, at the age of 18 or 19, and have had a certain amount of practical experience in the industry first of all. The other class would consist of men who have spent a larger part of their college course and go and prepare themselves more particularly to take the highter posts.

Q.—Do they go through a regular course ?—*A.*—They go through a regular course. It is two years, for instance, in industrial chemistry which includes a certain amount of physics, power transmission, design of machinery, factory design, as well as a great deal of work on industrial chemistry. In that way they do the actual manufacturing themselves on a small scale.

Q.—Is it whole time ?—*A.*—Yes.

Q.—Is that institute self-supporting ?—*A.*—It is an endowed institution. As far as the industrial chemistry goes, the work that they do practically pays for itself.

Q.—With regard to the Imperial Research Institute have you known of any case in which the work of the Imperial Institute has been of service to people out here ?—*A.*—No. I have not known of any case.

Q.—You are afraid that a central research institute in India would be too unwieldy ?—*A.*—It could not be available to the man that needs it most.

Q.—But if you had three or four in different parts of the country each dealing with a particular group of subjects, one with chemistry, one with metallurgy and so on, do you think that would answer ?—*A.*—Yes, particular industries taken up in particular institutions.

Q.—You have personal experience of the working of the scheme at Pittsburg ?—*A.*—Not exactly personal experience, but only through others.

Q.—You believe that it has worked successfully ?—*A.*—I am certain that it works very successfully.

Q.—Is there any institution in this country so far as you know which could do that work now as at present constituted ?—*A.*—What we were aiming at in the F. Sc., that is one of the things that we hope to do.

Q.—Would you confine yourself to a particular group of studies or a particular class of research ?—*A.*—No. We hope to take up six or eight at the beginning and if there is a desire to take up any other we hope to take it up also.

Q.—Is this scheme entirely under you ?—*A.*—Yes.

Q.—Have you got qualified assistants to help you ?—*A.*—We expect qualified assistants from America. It has been held up on account of the war.

Q.—I could not quite hear your answer to the President with reference to industrial schools. Would you not agree that it would be difficult to have two masters ?—*A.*—In that case I would leave it under the Education Department. I am quite convinced that it ought to be a part of the means of regular educational training. You could differentiate between the ordinary education and industrial education, but I think that a man to be of much use in industrial work needs the other education as well.

Q.—Are you aware that that opinion conflicts with many that have been given to us ?—*A.*—No.

Q.—The evidence till now given tended to show that it should be separated from the Education department and put under the Industrial department ?—*A.*—I should like to see a combination of the two, but if it is to be one or the other, I would leave it under the Education department.

Q.—With regard to Government scholarships you are quite clear that they should be reserved for men who have had actual experience in this country of the work for which

study abroad is to beundertaken and have proved practically their initiative and resourcefulness ?—*A.*—Yes.

Q.—You think the scheme up till now has not been so successful as it ought to be ?—*A.*—That is certainly my opinion.

Q.—A suggestion has been made to us that it would be a very good thing if these scholarships were continued after the students return to India to enable them to go round and have an idea of the particular industries in this country?—*A.*—I should think it would be a good thing except for the fact that the man who would be taking that scholarship all that period ought to have practical experience first, and if he had practical experience first he would practically always go back to the company with which he had been before.

Q.—This extension will be subject to Government control, *e.g.*; the man will not be allowed to idle away his time ?—*A.*—I think that would be a good thing.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You think that money grants-in-aid, bounties, guaranteed dividend etc., should not be given because you believe they tend to make the enterprise dependent on some outside body for the driving power necessary for success ?—*A.*—Yes. That might be a little bit strong, but I do feel strongly that too much help is a bad thing.

Q.—Suppose a steamship company is started in the country, which is a new concern and needs a lot of money, do you think that it can compete with the outside world without bounties or subsidies ?—*A.*—So far as the steamship company is concerned I think it should not apply.

Q.—In exceptional cases you are in favour of such aid ?—*A.*—Yes.

Q.—When the central research institute is started, do you think that college researchwork should b e carried on there ?—*A.*—I should hope to see the research institute as a definite part of the various colleges, and I do not think it ought to be entirely separate because its qualified men should come from the colleges.

Q.—Do you think that college boys should be admitted into this institution ?—*A.* Yes.

Q.—And research work should also be continued in the colleges ?—*A.*— Yes.

Q.—Do you think that the industrial schools ought to be under a dual-control ?—*A.*—Yes.

Q.—You may have a combined body. But who would be the head—the Director of Industries or the Director of Public Instruction ?—*A.*—I should think a third man altogether may be elected by themselves or otherwise.

Q.—You say, "While receiving such scholarships the men should be directed by Government as to the place where they should study, and the work they should do. Particularly do such men require help in being placed in factories at home." Do you think that home factories will take them ? What is your experience ? Do you think if a student is sent from India to America to learn in some specialised work the factories in America will take him ?—*A.*—I think the students will be taken in certain factories. In the larger factories they can be taken. The factories should only realise that by having the students they will increase their business with India.

Sir F. H. Stewart.—*Q.*—Does the Government give any direct aid in America towards industrial development ?—*A.*—No.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Forty per cent. import duties is quite enough.

Mr. C. E. Low.—*Q.*—Have you any idea as to the kind of chemicals that may be made by hydro-electric power in connection with the Salt Range in this Province ?—*A.*—Alkali for one in connection with many other products—sodium hydroxide.

Q.—Has the electrolytical process for that proved itself ?—*A.*—Decidedly. It makes a very much purer product. It is easily obtained and works out just as cheaply as the other.

Q.—I was under the impression—I may be wrong—that the existing process rather holds the field at present. Are they doing anything in other parts of the world than England, with electrolytical process ?—*A.*—They are using it a great deal more in America and Germany than before.

Q.—When you refer to alkali you refer to——?—*A.*—I refer to sodium hydroxide and sodium carbonate.

Q.—Do you think that it would be able to compete with the soda imported from Magadi ?—*A.*—I do not see why it should not.

Q.—You have not studied the relative prices ?—*A.*—But still you pay freight and carriage all this way and I should certainly think it could compete.

Q.—There is lime there, but not coal ?—*A.*—There is a certain amount of coal at Dandot.

Q.—Don't you require pure carbon for calcium cyanamide ? What about charcoal ? That would be too expensive ?—*A.*—I do not think it would. Of course, for those purposes ordinary sawdust works just as well. In the cyanamide process they usually use sawdust.

Q.—Have you carried out any investigation here with reference to the production of wood charcoal by dry distillation ?—*A.*—Yes.

Q.—Do you know whether there is any locally-worked-out information on the subject ?—*A.*—No.

Q.—In connection with the results obtained by the expert loaned to a private company, the only thing that the company get when they pay for the man is the atmosphere that this man works in, but in this country they will get the selection value of the man whom the Government have selected and his facilities for making research and so on, whereas in the other case the company will have to fetch a man and pay a higher rate ?—*A.*—The company is getting more than in the other case.

Q.—Have you considered the idea of specialised research institutes in different parts of India in contact with the industries there in actual working. Say, for instance, a metallurgical institute at Sakchi where you would carry out metallurgical research and the Sakchi works would be available both for the presentation of research problems and for testing the solutions on a commercial scale and also for the training of students at the research institute ?—*A.*—Is it not a little bit previous ?

Q.—We had specific proposals put before us to that end by very responsible people in connection with those works ?—*A.*—That sort of thing is being done at another place. Take the General Electric Company. Their school is practically the best electrical school in the country.

Q.—That is their school. But this thing at Sakchi would not be the Tata Iron and Steel Company's school but would be a Government institution with the assistance and support of the company. It might be concerned with metallurgical problems, not only on iron and steel going on there, but also on zinc and copper, and there is also the question of byproducts and the treatment of refractory furnace materials, and all these things would be going on either absolutely on the spot or within a very short distance, and that would at any rate have the result of keeping the problems to be investigated very closely before the eyes of the local research people and it would enable them to pass their young men through the shops ?—*A.*—If such institutions would mean helping other companies, I should think it would be a very good idea.

Q.—It is not a private institution but quite the reverse ?—*A.*—One should think that the individual company should do that work for itself.

Q.—The individual company is concerned with iron and steel and to a small extent with the byproducts, but the other companies will have these other matters ?—*A.*—I certainly think that would work very beneficially.

Q.—Turning to this question of small factories, it has been placed before us very strongly that it is absolutely necessary in India owing to the conditions which obtain here for the time being to pass the men who are going into industrial life through the shops and that the industrial atmosphere which exists in Europe and America does not render the same thing such an urgent necessity as it is here. One is inclined to wonder whether the small factories you propose would provide the necessary atmosphere. Would the working of the small factories be continuous ?—*A.*—It ought to be continuous.

Q.—Do you think it could be arranged in such small factories ?—*A.*—I would certainly think that continuous working could be arranged for.

Q.—The impression we have got from one or two of the very few small factories that we saw run under Government was that it did not seem to give the same shop atmosphere, working in the most economical way as regards labour, time and material which

gives the man a kind of eye for the job which is wanted for a foreman or chargeman ?—*A.*—My idea of these small factories is that they would give just that training. In the Pratt Institute what is done is this. A group of managers is assigned to one particular industry. Suppose they make soap. They go on for a month or so doing that and nothing else in that part of the work, and by turns they become foremen and the other foremen become workmen, and they are asked to make so much toilet soap of the given description and the foreman gives his directions and assigns work to the other men and they see how well and economically they can carry that out. It seems to me that is just the sort of training that is needed.

Q.—That seems to postulate either a considerable power of independent thought on the part of the students or a very careful and highly-organised skilled supervision from above ?—*A.*—I certainly do not think that any of these schemes can be worked out unless there is independence of thought on the part of the men going into them, and unless a man has got that initiative and independence of thought I do not think he can make a success.

Hon'ble Pandit M. M. Malaviya.—*Q.*—You say in your written statement that Government ought to assist industries by lending money to them. Would you prefer direct loans being given to industries or loans being given by some bank which the Government would assist ?—*A.*—I should think that some sort of an industrial bank, practically a Government concern, should be formulated to handle that sort of business.

Q.—The managers of the bank will have some experts to guide them in selecting what industries they should help ?—*A.*—Yes.

Q.—You say that pamphlets dealing with definite industries showing the raw materials necessary, their cost and sources, etc., would be much more useful than costly factories run by Government. Is that the system which is widely pursued in America, supplying information through information bureaus ?—*A.*—No. It is not very widely used there in industries, but it is increasing. The conditions are so very different that they are really not needed.

Q.—You speak here of demonstration factories being run as part of a technical institute. You think that if there are such factories, they will give opportunities to students, after they have received instruction in the principles or the theory of an industry, to have sufficient practical training in working the particular industry ?—*A.*—I certainly think it can be arranged in that way.

Q.—In order to make students work with a view to economise time, labour and material, you think that special marks should be awarded to them for work done in a satisfactory way, taking into account the time in which the work is finished and the quality of the work which is turned out ?—*A.*—It will have to take all those facts into consideration in making its report of what he had been doing, and they would of course count in favour of the student if it came to the question of marks ; but I do not think that very much would be accomplished unless the men are actually doing it for the sake of doing it, and not for the sake of getting marks.

Q.—Anyhow, you think that these conditions could be established in these small factories ?—*A.*—I certainly think that they can be with the additional value that the man can try things in two or three different ways.

Q.—So that this is a special advantage under the system you propose that the students will draw upon their own resources and will have to find out ways of working out things ?—*A.*—They will have that opportunity. I would not exactly say that they would be able to go ahead, but they would try different ways of making soaps, say, and if they could think of any possible refining they would have an opportunity in such a factory of trying it, whereas in ordinary factories they would probably not have.

Q.—Have you prepared any regular scheme of which you speak in the written statement ?—*A.*—We have a scheme for it.—It has still to be tried.

Q.—Can you send us a copy* of it ?—*A.*—Yes.

Q.—You say, " It seems to me that the biggest need at present is not a lot of very advanced research on this problem or that, but the actual training in the fundamentals necessary to operate a factory properly " ?—*A.*—Yes.

Q.—You think there is need primarily for making the results of research already done widely known among the people here and then following it up with research such as

* Not received at the time of going to Press.

you have suggested ?—*A.*—Yes. It is a question of spreading a knowledge of what has been done in the many years past rather than of any particular research work now.

Q.—You say that a better education than mere primary education is necessary to improve the labourer's efficiency. What have you in mind ?—Do you mean that there should be an industrial turn given to education from an early stage, in the elementary stage, for instance, by introducing drawing or manual training ?—*A.*—I certainly think that that has got to be done. It seems to me that primary education alone would not greatly benefit the man.

Q.—Unless you had this special feature in it ?—*A.*—But then after that, it seems to me he needs greater education than that.

Q.—But do you think it will be an advantage to all students, whether they are going to be industrialists or not, that they should have a little drawing and a little manual training introduced in the early stages of their instruction ?—*A.*—The students that come to the laboratory—many of them have not been sufficiently trained in the control of their fingers, and that training only comes from taking up carpentry or clay-work or weaving as part of their general education from the very beginning.

Q.—The main reason for your recommedation for a joint-board to control the industrial schools is that a larger number of students is likely to be drawn if they are connected with the Education Department than if they are not. Am I right in thinking so ?—*A.*—Partially. It is more, however, that the education should be sound education. I mean to say that I do not think that merely industrial education is at all valuable. That is too strong. It is valuable but it is more valuable if it is a part of, or if it has along with it, general education which would give the man the ability to profit by the industrial education better and make him more qualified in every way.

Q.—You have spoken of the industrial schools here. You said in answer to Sir R. N. Mookerjee that you think that the students might join the schools at the age of 18 or 19 ?—*A.*—Yes.

Q.—Am I right in thinking that you were referring to the higher technical schools such as obtain in Germany, Japan and America ?—*A.*—Yes.

Q.—Of the college standard ?—*A.*—Yes.

Q.—They are not of the school standard there ?—*A.*—No. I am referring more to the college standard.

Q.—It is in these higher technical schools that you would give education of a higher kind for training managers and supervisors ?—*A.*—Yes.

Q.—Rather than workmen ?—*A.*—Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.*—You have no experience of Japan or Germany ?—*A.*—No.

Hon'ble Pandit M. M. Malaviya.—*Q.*—That is why I brought America in. In industrial schools where you train workmen you would give school education with a distinctly industrial turn, with carpentry, smithy and other things, elementary chemistry, elementary physics and all that ?—*A.*—Yes.

Q.—You recommend that such industrial schools for workmen should spread over the province generally ?—*A.*—Yes.

Q.—And there will be these higher technical schools of the college grade in special centres ? It might be only one school to start with ?—*A.*—Yes. It seems to me that if a lot of these things were put in the regular educational system that would accomplish what is desired. In the ordinary public school where I took my course in America we had a good deal of wood-working, making all sorts of things useful and not useful. We had iron work, both lathe work and foundry work. We had pottery work and we made candlesticks, and we had a small amount of weaving but still we had some training in it, and we had of course drawing and things of that kind. Everyone underwent that course. It was not only for the man who wanted to go into industries, but everyone took it as part of the general training which would fit him for future work in anything.

Q.—Judged from your experience of what you yourself went through and what you see of the school education being now given here, you think it would be a distinct advantage

to the youths of the country if they had a system such as yours where industrial training is combined with the general education ?—*A.*—Yes.

Q.—It will draw out and develop intelligence better and character better ?—*A.*—And independence better.

Q.—You refer to the system of scholarships for instruction abroad ?—*A.*—Yes.

Q.—You say it could be extended. Am I right in thinking that you mean that the number should be increased subject to the safeguards which you have suggested ?—*A.*—If there is need for them I should think they should be increased.

Q.—You say that those alone who have had actual experience in this country of the work for which study abroad is to be undertaken should be selected. I think that is one of your cardinal recommendations ?—*A.*—Yes.

Q.—If they are so selected there would be a guarantee that they would make good use of the scholarships given ?—*A.*—Yes.

Q.—And then you want that their work should be supervised and they should be helped in getting into factories in places where they go for their education ?—*A.*—Yes.

Q.—We have been told that there is great difficulty in getting admission for our students in factories. Can you tell us how things are in America ?—*A.*—There is a great difficulty in getting a man into the factories unless they get into them through definite institutions. For instance, in leather work it is perfectly possible to get a student into a tannery in America through the Pratt Institute, and the students are allowed into the various tanneries to study conditions there. Also most of the companies of any prominence at all are quite willing for the different Universities to have their men go round and spend a short time there to study and see how things are being done. Of course, they would not throw open to them everything, but for the ordinary run of things they would permit it.

Q.—They do not make any restriction ? Do you think they will take in a large number of students ?—*A.*—They only can take a small number, but there are so many different companies doing the same thing that a large number can be taken.

Hon'ble Sir R. N. Mookerjee.—*Q.*—You yourself had no practical training in any workshop ?—*A.*—Beyond what we had in school ?

Q.—As a chemist had you any opportunity of going and having a practical training as the mechanic or engineer has ?—*A.*—I have had training in a chemical company.

Q.—No practical training on the mechanical side ?—*A.*—No.

Q.—All that you told us is your opinion and not from your experience ?—*A.*—Yes.

Hon'ble Pandit M. M. Malaviya.—*Q.*—I suppose by that you refer to what you have said about mechanical training and not generally to what you have told us about the system of education that obtains in America ?—*A.*—The system of education is certainly from my personal knowledge.

Hon'ble Mr. H. J. Maynard.—*Q.*—As a method of inducing foreign factories to take Indian apprentices, do you think it will be a good thing to make it a condition of Government custom that Indian apprentices should be taken by the factories concerned ?—*A.*—With a condition of that kind the man would not get the best training. They will say, "We have got to take that man and we shall give the least that we can." It seems to me that they should realise that by allowing Indian students to come there and study they will really increase their business rather than decrease it. If a man goes to any company at home and studies their methods and so on and comes back here in order to set up the same sort of thing, it might decrease slightly their business here, but I should think very much more likely that it would be increased because he would be a big enthusiast for that company—that company being the company in which he studied—and whenever it came to a question of comparison he would be a walking advertisement for that company in this country, and I should think that his study there and starting the same industry here would tend rather to increase the demand for the particular product and therefore make a larger business possible for the company as well as for himself than in any way spoil that company's business here.—That is my opinion.

Mr. C. E. Low.—*Q.*—Is any difficulty raised by labour as opposed to employers ? Do they object to Indians being taken in the factories in America ?—*A.*—No. The labour would not object.

WITNESS No. 379.

RAI BAHADUR GANGA RAM, C.I.E., M.V.O., *Lahore.*

WRITTEN EVIDENCE.

Banking facilities.

The only industry of which I have had practical experience is cotton-ginning and pressing.

In banking I have had a little experience as Chairman of Marwar Bank, which went into liquidation during the great banking crisis. As Chairman of this bank, I came into contact with several small industrial concerns.

Speaking generally no industries can be started or kept going without financial help from banks, and no banks can prosper in this country unless they get substantial financial support from Government.

The last banking crisis has taught us a lesson that strict Government control is required to win the confidence of the people, and to prevent frauds and misfeasance. Yet the growth and spread of indigenous banks is absolutely necessary, as they alone can reach the masses.

In order that the defects of indigenous banks which recently came to light may not be repeated, I propose the establishment of one Central Industrial Bank in each province. These central banks should be semi-Government institutions, with Government share in them, Government Auditors and Government Directors on Board. The Provincial Industrial Bank should be fed by Government who should advance money at 4 per cent. They should also receive deposits at 4 per cent. These provincial banks should act for the purpose of banking, as provincial university acts for education. All indigenous banks should be affiliated to the Central Bank, who should have full control over them. The Provincial Industrial Bank should advance money to indigenous banks subject to proper safeguards at 5 per cent, and the affiliated banks should be left to deal direct with trades and industries. The indigenous banks should be prohibited from giving more than 5 per cent. on deposits. Once this principle is adopted details can be worked out.

Now remains the question as to the source from which Government should feed these banks. For this subject I submit a novel scheme of the redemption of land revenue, which I fully explained in my pamphlet " The Agricultural Problems of India."

I venture to send 10 copies of this pamphlet* for the perusal of the Members of this Commission. If these central industrial banks also adopt the method of issuing receipts for deposits bearing interest at 4 per cent, compounded half-yearly, they will draw a good part of peoples' money.

Unless Government resorts to this source of collecting funds, their own ordinary sources will never be able to spare sufficient to finance the industries, whereas my method will solve the following problems :—

(*a*) The great problem of agricultural improvements.

(*b*) The great problem of banking.

(*c*) The most important problem of winning the sympathies of the masses for the permanence of British rule, as there is no surer and firmer foundation for loyalty than self-interest.

(*d*) The problem of the rectification of the mistake, if it may be so called, of giving permanent settlement, as under my system Government will get an increase of 25 per cent. over their present figure every thirty years.

(*e*) The problem of unearthing the hoarded money, if there is such money anywhere.

Convinced as I am of the unlimited potentialities of land, such zamindars as are tillers as well as landholders, such as there are in the new colonies of the Punjab, will produce money by intensive cultivation from the land, especially if they are given the facility of payment in 3 years (better 5) with interest at 6 per cent.

If such a system was tried with caution, for areas not exceeding say 100 acres, in the new colonies, I am sure the Government can safely count upon 5 crores (5 lakhs of acres at Rs. 100 an acre) in Punjab colonies alone which they can set apart for industrial concerns.

Having briefly given my views on the method of banking and the sources from which funds could be obtained, there remains only one thing which has brought industrial

* Not printed

development to continental countries, United States and Japan. This is the power of regulating our own tariff of Customs. But as this matter is left out of the scope of the Industrial Commission, I will say nothing beyond mentioning the fact that it is at the root of all industrial progress, and wishing that the Commission could exercise the influence of their good offices with the Home Government, to allow India to impose such duties for the articles consumed in India, and to the extent to which such articles are consumed here. Any surplus manufactures which would have to be exported might be subject to countervailing duties. Our first attempt should be to supply our own wants without going to foreign markets. At present there are hundreds of things required by us, of which raw materials are exported from this country and are reimported after manufacture from foreign countries. I would have no objection in this respect to give preferential tariff to Great Britain, provided we received reciprocal treatment.

Capital.

Q. 3.—Cotton-ginning and pressing in the Punjab is being overdone in places, so much so that the factory-owners find themselves under the necessity of resorting to combinations in various forms, like the pool system, joint-purchase, etc., etc. This enables them to make some factories shut down and earn their profits from such combination funds. This is a system which should be discouraged and if necessary prohibited by law, because the producer pays for the factories lying idle.

No cotton-ginning factory should be allowed to be started in future without the sanction of the Director of Industries, who should see before according sanction whether the produce of cotton in the district justifies a new factory, 1,500 maunds of *Kappas* or one hundred bales of lint per machine should be the standard.

Government assistance.

Q. 5.—From amongst the several methods of giving Government aid, given in this question, I do not recommend any except the hire-purchase system on sufficient security, and with Government lien on the factory till Government debt is discharged. But the trouble, I can say from experience, is not to find capital for starting a concern but to find money at reasonable rate of interest for the working capital. Government can greatly help in this matter, if money is advanced on the security of landed property, and house property under adequate margin.

Co-operative societies.

Q. 18.—Co-operative societies should be established and encouraged for cottage industries, such as —

Envelope-making.
Sock-making.
Weaving.
Lace-making.
Rope-making.

These societies should supply raw material (in case of weaving and sock-making yarn), and take finished products. They should either buy the finished products outright or advance money against them and then settle amounts after sale.

Demonstration factories.

Q. 19 & 20.—In the Punjab a demonstration factory of cane-crushing by an oil engine and making gur is very necessary. There is a factory like this in Poona.

General spread of such factories all over the province will give a great impetus to the cultivation of sugarcane just as cotton-ginning has done to the growth of cotton. Refining factories for making sugar out of gur will then spring up at chief centres.

Research abroad.

Q. 21 & 22.—I get the *Bulletin* of the London Institute. It gives valuable information. It is enough for all research work required in the United Kingdom.

Technical aid to industries.

In the V. D. J. Hindu Technical Institute, Lahore, of which I am the President, we have established a research branch with a grant given by Punjab Government and for the last eighteen months have been investigating the recipes for different small industries, and have been teaching the public. I enclose a list of small industries which we have succeeded in making, and when the Commission comes to Lahore I would like them to pay a visit to the Institute.

These are small industries of a general nature, and a few of them are such as can be taken up as cottage industries. We have been trying to teach them free of any charges, but so far only three or four of them have been taken up—not for want of inclination or capital (as very little is required), but for want of organization. In this respect Government aid might prove useful. The commercial museums should be established all over the country, there should be a central one for a province, with branches at the headquarters of each district.

Assistance in marketing products.

Government assistance is absolutely necessary for the marketing of products, and a Government trade representative should be appointed to boom such products.

In order to do this successfully, all Government Departments should be warned, especially the Railway Stores, the Public Works Department, the Army Stores, the Medical Stores, the Government Stationery Department, that their requirements should be advertised freely for six months in the Trade Journals before indents on England or other countries are passed. There should be one central buying agency for all provinces, like the Munitions Board recently started by Government, to whom all applications for stores should be made.

There should be a Government analyst in each province who should give his advice free of charge on the analysis of a product.

Land policy.

Q. 43.—Acquisition of land for industries should be defined as a *public purpose* for the application of Land Acquisition Act.

Training of labour and supervision.

Q. 44.—Primary education will greatly help the industrial development, it will train the brain to understand things better, but the primary education should include a little drawing and use of scales.

Q. 44 (*a*).—My practical experience is rather unfortunate. I have seen sons of artisans and sons of labourers employed in industries, if sent to school, get a sort of abhorrence to manual labour, and generally end in seeking employment as chaprassis, gatekeepers on canals, or forest guards in the Forest Department. On such post they get good perquisites over and above their pay and have practically easy life. But of course it is undeniable that a little education, especially if it is attended with a little drawing, even to the extent of the use of scales, goes a long way towards opening a workman's mind. The present syllabus of primary education will have to be considerably modified for the workmen class.

Apprenticeship system.

Q. 46.—The only experience I have had is as President of the Hindu Technical Institute. Facilities are badly needed for training in factories and workshops. But my experience is that private factories won't take such apprentices for fear of their spoiling the articles and tools entrusted to them, moreover there is the important question as to who should give subsistence allowance to these men. Government might help in this respect.

Industrial schools.

Q. 47.—The industrial schools under the Department of Education established so far in the Punjab, are absolute failures.

Q. 50.—The industrial schools should be under the control of the Department of Industries, but should be allowed to remain under the management of the Department of Education. In fact, both departments should pull in harmony and unison.

Mechanical engineers.

Q. 54.—There is no uniformity at present, but it is very desirable ; and the certificates obtained in one province should be recognised by other provinces.

General official administration and organization.

Q. 56.—None in the Punjab.

Q. 57.—Director of Industries, separate from Director of Agriculture, should be appointed in the Punjab, without any further delay. There should be a Board of Industries. It should have executive and controlling powers.

Q. 60.—The Director of Industries must be an official with business habits. I don't see how a business expert can advise on all industries.

Q. 61.—The Director of Industries should be an *ex-officio* Member of Legislative Council and Secretary to Government. The importance of this department should be recognized.

Q. 62.—There must be an Imperial Department, the Director-General of Industries, so that the activities of several provinces could be correlated.

Cottage industries.

Q. 62 (*a*).—Cottage industries should be one branch of this department.

Q. 62 (*c*).—At present I see no other except—

(*a*) Making socks and banians.

(*b*) Envelope-making.

(*c*) Weaving cloth from yarn.

Other forms of Government action and organisation.

Certificates of quality.

Q. 89.—For textile manufactures, some sort of hall-marking system is absolutely necessary. Details have to be worked out, but there is no doubt that the indigenous manufactures in the textile line (cotton, woollen, silk or embroidery) are dying out simply for want of uniformity and honesty.

Adulteration.

Q. 91.—Ghee and other articles of food should be preserved from adulteration, and penalty should be imposed under proper safeguards against abuse of power.

Q. 94 & 95.—There should be some sort of Government organization in each province who should undertake to write specifications and to furnish necessary drawing and to go through the formalities required by the Act, which, in itself, is faulty inasmuch as it requires the patentee to say too much before provisional protection is given. For the purpose of granting provisional protection, the Patent Law should be simplified.

Q. 96.—No.

Railway rates.

Q. 98.—The railway freights to seaports are reasonable, but they are very heavy for internal trade. It costs one about as much to send his wheat 800 miles to seaport as to send inland 200 miles. This mere fact reacts on agriculture inasmuch that it hinders people from growing things on economical lines. It also reacts on the supply of districts where there is some scarcity from districts having a surplus. Regulation of rates should be under a Board on which trade representatives should have a voice.

Q. 99.—Proposals are to extend feeder railway in Punjab on 2 feet 6 inches gauge. This is a sad mistake, it must be either 5 feet 6 inches gauge or cheapest (2 feet gauge) like the one I have from Buchiana to Gangapur.

Freights.

Q. 101.—Oil industry is very much handicapped for want of suitable waggons and ships to carry oil in bulk.

Oil industry is the one industry which requires to be greatly encouraged, because we want cakes for cattle and for manure. It can be immensely developed if Government adopted the suggestion of making tank-waggons and ships, and also if a pioneer industry was established for making tins.

Jail competition.

Q. 109.—There is unnecessary hue and cry raised against Jail competition. In my opinion Jail industries are very good training schools for labour which would otherwise remain a drag on society, and turn into confirmed brutes. I have observed the Jail administration for nearly 20 years of the period of my service. I have always been of opinion that it is a mistake to give prisoners hard labour like wheat-grinding. It has no deterrent effect on habitual convicts. Encouraging small industries in Jail would have great civilising influence on the criminal population, and a little training in any particular industry will train their mind and hands to industrial labour. But for the carpet-weaving started in Lahore Central Jail, there would have been no carpet industry in the Punjab. It was Mr. Blake, Deputy Superintendent, Central Jail, who on retirement from service carried the experience of carpet industry in the Lahore Central Jail and caused the establishment of a carpet factory in Amritsar.

Carpet-making, printing, brick-making and chintz-printing: These are very good industries for the Jail population.

There is one idea which will greatly foster the establishment of new industries. This is that some sort of protection in the form of Patent Law should be introduced by which a person starting a new factory should be given a few years' start before the special industry is thrown to public competition. I would give any one starting a new industry in a particular place to have the right of claiming that no one else in a radius of fifty miles or so be allowed to start a similar concern. The Director of Industries should be given some power in this respect.

Witness here gave confidential evidence.

VICTORIA DIAMOND JUBILEE HINDU TECHNICAL INSTITUTE, LAHORE.

RESEARCH DEPARTMENT.

List of Articles.

1. Universal envelope-making machine.
2. Gum and cloy.
3. Kikar gum purified.
4. Tooth powder.
5. Disinfecting liquid.
6. Boot-polishing liquid.
7. Shoe-blacking paste.
8. Brown boot-polishing cream.
9. Blue-black ink.
10. Blue ink.
11. Stamp pad ink.
12. Marking ink.
13. Stencil ink.
14. General glass sticka.
15. Water glass sticka.
16. Fire glass sticka.
17. Metal-cleansing solution.
18. Razor-sharpening paste.
19. Jewel-polishing powder.
20. Blood charcoal powder.
21. Cream for face.

22. Fire-extinguishing solution.
23. Fire-extinguishing powder.
24. Nail-cleaning solution.
25. Mohwa paint powder.
26. Mohwa paint liquid.
27. Buttons of various kinds.
28. Glass tile.
29. Crucibles.
30. Loofah bath scrubber.
31. Tin gold lacquer.
32. Tin crystalliser.
33. Superphosphate of lime to be used as manure.
34. Monkey brand soap.
35. Cheap laundry soap.
36. Wax cloth for book-binding.
37. Turpaulin for roof and railway.
38. American cloth for upholstery.
39. Animal charcoal to be used for sugar refining.
40. Oxalic acid.
41. Crayons for writing on glass.
42. Imitation bees' wax from animal fat.
43. Extract from Velauk (Ancardium).
44. Flower-preserving solution.
45. Sweet potatoe flour.
46. Mustard.
47. Tomato sauce.
48. Orange peel marmalade.
49. Jam gooseberry.
50. Fruit preserve.
51. Crystallised orange peel.
52. Whole orange marmalade.
53. Jelly gooseberry.
54. Dry fruit chatnis.
55. Curry preserve in mustard oil.
56. Dry prunes for cakes.
57. Dried apricots for tarts and pudding.
58. Pistachio nuts for confectionery.
59. Meat and flour powder.
60. Salted goat's meat powder.
61. Black currants, big and small.
62. Orline plum jams.
63. French prune jams.
64. Dried Damson for puddings and stews.
65. Dried mulberry.
66. Large sultanas.
67. Apricots without seed.
68. Preserved cherry.
69. Baking powder.
70. Egg powder.
71. Purified Salt.

Hon'ble Pandit M. M. Malaviya.—*Q.*—You have given us a very valuable note, and therefore I will not ask you many questions. But there are just a few points which need to be elucidated. And first let me ask you about your Bank. You say here that you were Chairman of the Marwar Bank. Will you kindly tell us why it went into liquidation? We are told it has paid 16 annas to depositors.—*A.*—To all depositors, yes.

Q.—Why was it that it went into liquidation?—*A.*—Owing to the general storm.

Sir F. H. Stewart.—*Q.*—Has it been finally wound up?—*A.*—No, we still have assets and hope to pay a large part of the shareholder's money.

Q.—Is there any hope of reconstituting it?—*A.*—I would not have anything more to do with it. I was simply driven into it somehow. I am not going to be a banker any more. I have often been approached by shareholders, as well as depositors, to re-start the Bank. I told them that I would not have anything to do with it.

Hon'ble Pandit M. M. Malaviya.—*Q.*—You have paid 16 annas to depositors and you say you hope to pay the shareholders a certain proportion.—*A.*—A good proportion. It all depends, if we can recover the decrees; we have got decrees but cannot recover them through the kindness of a few lawyers.

Q.—Is it the lawyers or the law that stands in the way.—*A.*—Well, one thing or the other.

Q.—You say here that you think "the growth and spread of indigenous banks is absolutely necessary, as they alone can reach the masses." Therefore, you recommend the establishment of an industrial bank in each province, with branches in different districts?—*A.*—The other banks need not be branches, but they should be affiliated; that is to say, they should conform to the rules and regulations and some control, just as a university has control of all schools. The schools need not be branches of the university, but simply affiliated to it.

Q.—What Government help would you recommend should be given to this central industrial bank in the shape of shares purchased?—*A.*—There ought to be a certain amount of interest, just as much as Government has in the Banks of Bengal and Bombay to enable them to appoint their own Directors. The Government should advance them money at a low rate of interest, so that the industrial bank should also be able to advance money to others at a low rate of interest. What really killed the indigenous banks here was the high rate of interest they were paying to depositors, and without that high rate they could not draw the money.

Q.—Do you think you will get many other banks to be established, if there was one such central bank in the capital of a province?—*A.*—I think so.

Q.—You expect that private capital would be invested in these banks?—*A.*—Private capital would be drawn and confidence would be restored.

Q.—And now as regards this novel scheme of yours about the redemption of land revenue; it seems on the face of it an excellent scheme. But do you think that people will be willing to pay the necessary price to acquire a permanent revenue-free proprietorship in the land on the plan that you have suggested?—*A.*—I think so. Whomever I have talked to seemed to be very eager to avail themselves of the opportunity of becoming proprietors of land. They say that improvements in land are simply retarded on account of the dread of settlement which hangs over their heads.

Q.—Are you speaking of peasant proprietors or of zamindars?—*A.*—No, not of very big zamindars, because I have no experience of them. We have none in the Punjab; but generally of peasant proprietors.

Q.—You expect that in all parts of the province people will welcome such a system?—*A.*—Yes, but I recommend it being started with caution and from the bottom. I do not recommend that its advantages should be given to big zamindars to start with; but it will be a very great boon to the peasants who are small landholders.

Q.—You expect very great results from this, both in the prosperity of the country and in revenue to Government? Is there any alternative system which you have to suggest for securing the same amount of interest in land among cultivators?—*A.*—That is a very long question. I cannot say offhand.

Q.—You say that "cotton-ginning and pressing in the Punjab is being overdone in places" and that already the remedy is being found by the pooling system.—*A.*—It is not a remedy. People had to fall back upon it.

Q.—Don't you think that this will solve it?—*A.*—It is rather an evil not to be encouraged, because really the cost of the pool falls upon the producer.

Q.—Do you not think that this would solve itself in the natural course of things; or do you think it is necessary to take special steps to check it?—*A.*—I think it ought to be discouraged by every means possible.

Q.—You have spoken of co-operative societies being established to promote industries. Do you refer to hand-loom weaving?—*A.*—I am not certain whether it should be restricted to hand-loom weaving. My own opinion is that a small-power-machine weaving will pay in the end much more than hand-weaving: for instance, Huxley's weaving mill started by, say, one or two horse-power engine will prove in the end much more economical than hand-weaving. There is very great room for it. If yarn were supplied to the people, and if their products were taken, the co-operative system could be brought into action in this way.

Q.—Is not the Punjab distinguished even now for its weaving industry for its silk and woollen manufactures?—*A.*—Not particularly silk, but shawls, etc.

Q.—Is there not a good deal of trade in hand-loom cotton weaving?—*A.*—We use a large quantity of the products of the mills in Ludhiana.

Q. If you have co-operative societies to help in this direction, you expect there will be a great development in hand-loom weaving in the province?—*A.*—Yes.

Q.—You say here: "We have been trying to teach them free of any charges, but so far only three or four of them have been taken up—not for want of inclination or capital (as very little is required), but for want of organization."—*A.*—That is my information. The boys, who come and learn these things, simply say: "How are we to put our products in the market"? That is their difficulty.

Q.—The difficulty is in the way of marketing?—*A.*—Marketing and booming, *i.e.*, bringing the things to the notice of the public.

Q.—You speak of the need of yarn here: don't you think you could produce your own yarn more largely than you do at present? You produce a good deal of cotton?—*A.*—Yes.

Q.—Where does it go to largely? It is not consumed in the province?—*A.*—Generally all to Bombay.

Q.—What is it that stands in the way of your making your own yarn in this province?—*A.*—The competition of the foreign yarn, and of Bombay yarn, and also the lack of trained labour. A spinning mill here depends upon labour imported from Bombay and elsewhere, which necessarily becomes more expensive.

Q.—But your cotton goes to Bombay and probably to Japan and other countries, and if they can spin yarn and make a profit out of it by carrying it such long distances, you should be able to do it here?—*A.*—In cotton-spinning the foreign element greatly comes into operation. The price of yarn does not keep pace with the price of the cotton; the price of

yarn depends more upon the output and upon the demand from China and other places. I don't think in the Punjab, unless the yarn is produced for local consumption, it can ever compete with the yarn consumed in Bombay. We will have to compete with the yarn that Bombay sends here.

Q.—Do you want protection for that?—*A.*—No, I don't want protection for that.

Q.—Then how do you want to get over that competition?—*A.*—I am afraid I am not quite competent to give an opinion on that.

Q.—You suggest Government assistance in the marketing of products. Don't you think that that work could be done by co-operative societies?—*A.*—Yes, it might be, but I want Government assistance in helping us in putting before the public what the Government needs, or in what the Government needs are greatest; and if we can even supply Government needs, that would give a great impetus to the spread of products elsewhere.

Q.—You want Government patronage for these products?—*A.*—Yes.

Q.—And an advertisement of Government's needs, in order that people may be encouraged to produce the goods?—*A.*—Yes, that people may know what is certain to sell.

Q.—You suggest that railway stores and other departments should be told that their requirements should be advertised. That should be made a rule, that each of these departments should advertise their requirements?—*A.*—Yes.

Q.—At present that is not done?—*A.*—Not usually.

Q.—You suggest one central stores department in one province Don't you think there may be a danger of partiality to some provinces? Do you think one Stores Department for all provinces in India would be quite sufficient, or would you want a Stores Department in each province?—*A.*—A Stores Department in each province under a central Stores Department.

Q.—You suggest that "the present syllabus of primary education will have to be considerably modified for the workmen class." In what direction? In the direction of giving an industrial turn to education?—*A.*—Yes, industrial and commercial.

Q.—Drawing and manual training, and a little elementary chemistry and physics?—*A.*—No, only drawing and manual training Once you introduce other subjects you don't know where you are. I would confine it to elementary drawing chiefly.

Q.—Are there many industrial schools in the Punjab?—*A.*—There are a good many attached to different schools.

Q.—Why have they failed?—*A.*—Simply because they are trying to teach things which it is impossible for a boy to learn. To begin with, they start boys of the upper artisan class with carpentry. Unless a man is born a carpenter, he cannot be a good carpenter. Such is my long experience.

Q.—You think that the selection of the boys is to blame?—*A.*—No, but instead of wasting their time in teaching them carpentry, if they taught them drawing, or some elementary thing, which would open their minds to grasp details of anything of the industrial line, that would be much better.

Q.—You speak of the handicap of the oil industry for want of suitable wagons and ships to carry oil in bulk. Has any representation, to your knowledge, ever been made to Government about it?—*A.*—No, I don't think so; but it is a most important industry, which should receive immediate attention.

Q.—What is it that stands in the way of its being developed?—*A.*—Simply because we cannot export oil in any economical form.

Q.—Otherwise you think the capital would be forthcoming to take up this industry?—*A.*—Yes, and it would help agriculture immensely.

Q.—You suggest that anyone starting a new industry in a particular place should have the right of claiming that no one else in a radius of 50 miles or so should be allowed to start a similar concern.—*A.*—That is my experience. If anyone starts a new industry, people are inclined rather to copy it than to try and discover something new for themselves. First of all they go and watch how much the man makes, then try to steal his workmen and copy the industry. It is a mere suggestion. I am not prepared to give details about it.

Q.—It is not a thing you insist on?—*A.*—No.

Hon'ble Mr. H. J. Maynard—Q.—As regards fuel, I think you mention the fact that fuel is more or less exhausted?—*A.*—Yes.

Q.—Do you know that about 40,000 acres of irrigated plantation have just been established by the Forest Department, in order to meet provincial requirements?—*A.*—I shall quote, if I may, the authority of Booth-Tucker, who has had considerable experience of this. The Forest Department would not deviate from the old lines, and would not try to disc over anything which may be more conducive in bringing about the desired results. Booth-Tucker's own expression—he gave me this information—is: "I am going to try on my own land. There is a certain class of eucalyptus which can be grown in 5 years, which makes very good fuel, and which is grown in Australia." I asked him: "Why do you not suggest to the Forest Department to grow this?" He replied: "Whoever heard of the Forest Department trying a new thing?"

Q.—But still you do know that 40,000 acres have been put under fuel, with the object of meeting fuel requirements of the province?—*A.*—Yes, that is why I mention that if they went about it in the right way, perhaps that 40,000 acres would go long enough; but if they simply put in the old-fashioned things, it would not bring any better results.

Q.—You mean the growing of shisham.—*A.*—Yes, and those other things in the Changamanga Forest. If you give me that land, I will give you twice the money they are realising. They are not producing fuel enough for that area. I would buy for that twice the amount of coal.

Q.—We were told by a witness the other day, in connection with this matter of wood, that he wanted mulberry wood, and had great difficulty in getting it.—*A.*—I was present here, and was glad to get that information from him. There is absolutely no difficulty in growing mulberry. It is the fastest growing tree. Zamindars don't grow it because it invites birds; but it can be grown in groves to any extent you like.

Q.—And you yourself are prepared to take it up?—*A.*—I am. I would recommend that the Director of Agriculture should issue bulletins, and if there is any demand, we shall be very glad to grow mulberry in groves. It is a very fast growing tree and gives a good shade, but it is not a favourite tree with zamindars.

Q.—I see you have made some remarks about oil: you were speaking of vegetable-oil?—*A.*—Certainly.

Q.—As regards that question of purchase of land revenue, commutation of land revenue, I thought there was a little misunderstanding in what you said Of course the ordinary cultivators in the province are already proprietors, except to a small extent, in the canal colonies.—*A.*—In the canal colonies they are all full proprietors now. Of course they pay land revenue.

Hon'ble Pandit M. M. Malaviya—*Q.*—I understood your scheme to mean that after they have paid the price of the land, they will not have to pay land revenue?—*A.*—The price of redemption. They are already proprietors of the land.

Q.—But they have to pay revenue year after year? Your proposal is that they should pay for say, 30 years' revenue and should never be asked to pay revenue again That is what you mean by their becoming proprietors of land?—*A.*—They are proprietors already. They only buy up the Government right in the land. The land revenue is supposed to be a share in the produce of the land.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Only for surface rights not for minerals?—*A.* No, you can reserve the mineral rights.

Hon'ble Mr. H. J. Maynard.—*Q.* I think you said that this would cause them to take an abiding interest in the land. Don't you think that they take an abiding interest in the land already?—*A.*—They do not, my experience and also my information from good sources are that generally it takes 5 years to do the settlement, and when the settlement period is coming to a close, 5 years before that, they begin to lose heart, and try to produce as little as possible, so that the next 5 years he does still less, so you lose the potentiality of the land.

Q.—You know that in calculating future land revenue, the average on which we calculate is spread over very much more than 5 years?—*A.* So much the more unfortunate, because if they know how many years it will spread over om that date, they will lose heart over it.

Q.—The great disadvantage of a recurring settlement is this feeling of uncertainty, and a tendency not to produce much?—*A.*—Yes, what I did say was, supposing you give this privilege, it would result in this, that from the same land from which they are producing ten maunds per acre now, I am sure that they can produce 30 maunds per acre. It is only a question of the number of harrowings, and the labour they devote to it.

Q.—Do you think that the amount of labour would be necessarily given?—*A.*—Certainly, because there would be no Patwari to make a report which would go against them in the next settlement.

Q.—In regard to the matter of sinking wells, do you think the impending settlement has any effect?—*A.*—Certainly, although I am aware that for 30 years he is protected from enhancement of revenue.

Mr. C. E. Low.—*Q.*—Do you consider that in provinces which are not liable to revision of assessment, a great deal more money is spent on improvement of land ?—*A.*—No, I can safely say, if I may, without meaning any disrespect to any one, that in permanent settlement there is less attention paid, because the zamindars really take the last drop of blood out of the tenant.

Q.—You propose that the money obtained by the redemption of land revenue should be invested in Presidency Banks ?—*A.*—Yes, and in other improvements. I only quoted this as very desirable, as two objects will be attained : it will tend to give an incentive to the improvement of land, and also to provide facilities for industries.

Q.—Is it not unusual for any Government to invest in a bank like that, instead of redeeming its own papers ?—*A.*—It is practically the same thing.

Q.—There is a great deal of difference in the rate of interest ?—*A.*—That is a matter of detail. I only propose 4 per cent.

Q.—When you wrote this, probably the rate of interest had not been changed ?—*A.*—That is a matter of detail, but from the calculations which I have put in with my note, you will see how the capital accumulated afterwards and provided for all exigencies, and all possible losses

Q.—Do you think that that security is as good as that of the land which is under the control of the State ?—*A.*—I don't know that the security is not better. It is not subject to any vicissitudes of nature; famine may come and you have to think of suspension of revenues ; and there may be many calamities of nature, whereas in this case you have fixed revenues, and not only that, but an ever-increasing revenue. I think I am safe in saying you can never show a record by which you have been able, in recurring settlements, to get 25 per cent. more after every 30 years regularly. With my scheme you can get regularly 25 per cent. more.

Q.—I should be inclined to think that, from the Government point of view, land was the better security still. Take the case of Russia, you get civil disturbances, and a demand is suddenly sent to the bank to pay over all the gold that they have in their cellars ?—*A.*—I hope we won't come to that.

Q.—The land is still there, and is susceptible of money being raised from it for the public benefit, unless the public have committed themselves not to take it ?—*A.*—In this case there is another element. We have foreign rule. My method is the only way of spreading loyalty among the masses.

Q.—We are not concerned with that at present ?—*A.*—Only as part of the scheme when you mentioned Russia.

Q.—My example had reference to this that a bank may be destroyed, or very seriously injured ; but the land, short of an earthquake or a cataclysm of nature, is always there. You are aware that this idea of redemption of land revenue was tried some 50 or 60 years ago ?—*A.*—Yes.

Q.—Do you know why it was not proceeded with ?—*A.*—Because they gave very easy terms.

Hon'ble Pandit M. M. Malaviya.—*Q.*—England does not derive its revenue mainly from land ?—*A.*—200 years ago it was mainly from land.

Q.—During the last 100 years it has depended for its revenue not upon land but on other sources. The fact that Government would rely upon other sources than land will not necessarily be a disadvantage ?—*A.*—No, and by spreading industries all over, Government will have their income from various other sources. All those people who prosper will have to pay income-tax.

Mr. C. E. Low.—*Q.*—Could you give us your experience with regard to the working of small pumping plants in this province for irrigation ?—*A.*—How do you mean ? I am doing it myself.

Q.—I should like to know what the position is ; is it practised by people in general on a large scale ?—*A.*—Whenever they get a chance. Our Financial Commissioner is here ; he knows how much people like to have a chance of doing it. Up to the time of the War it was faring well. It is a paying proposition.

Q.—In the case of ordinary zamindars, do they find some difficulty in keeping their plant working at a maximum grade of efficiency ?—*A.*—Not for want of men, but for want of water. If the pumps fail, it is only for want of water. The source of water has to be very carefully diagnosed. From my experience I can give you very approximately the cost for each lift.

Q.—As a matter of practice, does the ordinary zamindar purchase the best type of pumps for his local want ? Does he know exactly about the lift ?—*A.*—That knowledge is soon spreading. He has no difficulty in getting men to keep his pumps going.

Q.—You don't think any assistance could be given by an expert staff going round and inspecting them ?—*A.*—Yes, we have an Agricultural Engineer for that purpose.

Q.—You think that the man's work is helpful ?—*A.*—Yes.

Hon'ble Sir Fazalbhoy Currimbhoy.—*Q.*—You own many of the cotton-ginning mills here ?—*A.*—I own 3 factories in 3 places.

Q.—And you are working on the pool system ?—*A.*—No. I am working my own cotton. I have done a little work for others, but that is only a matter of business. All my cotton gins are working.

Q.—You suggest that if there are not many companies in one place, there will be no pool ?—*A.*—If no more than a certain number of factories be allowed to be put up they won't have a pool.

Q.—If a larger number of people unite together and fix a rate, the small number have more chance to do the same ?—*A.*—If they have sufficient cotton to keep a factory going, they will not enter into that sort of combination. We don't generally combine unless there is necessity for it.

Q.—You mean unless it is necessary to make more money ?—*A.*—If they combine, that does not affect the zamindars. It is the pool which affects the zamindar. The Agricultural Department has started a system to auction *kappas*.

Q.—Do you know what the rates are; where there is a pool, and where there is no pool ?—*A.*—The rates are ordinary rates, *plus* the amount they put in the pools. It is a very simple way to calculate. Supposing they put 4 annas per maund in the pool, the rate will be the ordinary rate, *plus* 4 annas.

Q.—What is the ordinary rate, where there is a pool, and where there is no pool ?—*A.*—I don't understand what you mean

Q.—You are ginning at one place, where there is no pool. What are the rates of ginning and pressing ?—*A.*—To the ordinary rates add 4 annas.

Q.—What are the actual rates at which you gin and press ?—*A.*—We buy our own cotton. We don't gin for other people. The rates vary according to circumstances.

Q.—So in both ways it does not benefit the cultivator; if there is no buyer, still the rates are high ?—*A.*—A pool is a different thing. What is done in the Punjab is that they impose 3 or 4 annas on the *kappas*, which is put on the combination pool in the end divided into number of machines This extra comes out of the pocket of the producer.

Q.—Are the rates the same at both places, or are they lower where there is a pool ?—*A.*—That depends upon the competition of the factories.

Q.—About this Marwar Bank; what business was it doing: was it lending money to shroffs or to industrial concerns ?—*A.*—It was doing both.

Q.—Had you a qualified Manager to manage the bank ?—*A.*—There is no examination for Managers.

Q.—By qualified I mean a man with experience ?—*A.*—We engaged the best man we could get.

Q.—Who had banking experience ?—*A.*—Yes.

Q.—And you said that the banks here had to pay a very high rate of interest ?—*A.*—Yes, otherwise they could not get money.

Q.—The Bank of Bengal branch used to get plenty of money at lower rates ?—*A.*—Because people had more confidence in it.

Q.—Where are they now depositing ?—*A.*—They invest somehow or other.

Q.—Do they keep their money under-ground ?—*A.*—No, that time is passed now.

Q.—Then all the money, which is coming for exports into the Punjab, what is it being used for ?—*A.*—Do you mean gold ? Some of our peasantry are getting prosperous and are making jewellery.

Q.—About your new system of financing industries through this money of the agriculturists, do you think that without that the money cannot be had to finance industries. Is that the only remedy ?—*A.*—I did not say that it is the only remedy.

Q.—Supposing Government started an industrial bank, with guaranteed interest, do you think the public money will come into it ?—*A.*—It will depend upon what the guaranteed interest is.

Q.—5 per cent. or 5½ per cent. ?—*A.*—5 per cent won't satisfy me.

Q.—You will put in the land; but what about the general people ?—*A.*—It depends how much money a man has got. I may tell you as a whole that in the Punjab there are not very many wealthy people They are not poor either.

Q.—Individually they are all right, not poor or rich ?—*A.*—There is no overflow of money with the people.

Q.—There will be very soon ?—*A.*—I hope so.

Q.—About your technical school, you say "We have been trying to teach them ?"—*A.*—I was ordered by Government to do that. This research money is purely Government money, and we undertake to do it as a labour of love.

Q.—Those people who can afford to pay are learning without charge ?—*A.*—I got orders from the Director of Industries that I should teach everyone free of charge.

Q.—Then you say, "Government assistance is absolutely necessary for the marketing of products." In what way : should Government become traders ?—*A.*—I explained that ; simply by putting before the public the wants of a certain commodity.

Q.—You mean what the Government needs it should help to produce : not marketing generally ?—*A.*—Yes ; and give them facilities for the sale of their products.

Q.—You say, "Facilities are badly needed for training in factories and workshops." But at the same time you say "But my experience is that private factories won't take such apprentices, for fear of their spoiling the articles and tools entrusted to them." In what way do you suggest this should be done ; by forcing private companies to take apprentices ?—*A.*—No, by giving a subsistence allowance to the boys who go to the factories.

Q.—But if the boy is not taken into the factory ?—*A.*—They will be taken, but they won't pay them anything. They won't pay them a subsistence allowance.

Q.—Then you say, in answer to question 56, "None in the Punjab," but there is the Board. It is doing nothing ?—*A.*—There is no Board. There is a Director of Industries whose duties are combined with those of the Director of Agriculture.

Q.—You say, "For textile manufacture some sort of hall-marking system is absolutely necessary? "—*A.*—Yes, that is absolutely necessary.

Q.—You want Government to have the hall-marks ?—*A.*—Either Government or any Board which Government should appoint to put the hall-mark, but on no article which is of uniform quality.

Q.—But the people pay the price, whether it is of uniform quality or not ?—*A.*—The people are not such fools.

Q.—What is the protection ?—*A.*—Simply if Government appoint some sort of system of hall-marking, people would understand that it was of uniform quality.

Q.—Supposing I make a certain article, which is good, but not necessarily of uniform quality throughout. Why should it be rejected ?—*A.*—It ought to be of uniform quality throughout.

Q.—But I am not cheating anybody ?—*A.*—The buyer will never have confidence in giving a larger order ; whereas if the quality is uniform, he will at once place large orders.

Q.—If I make a piece of cloth with full gold in some parts and semi-gold in others why should they reject it ?—*A.*—If it is semi-gold, it must be semi-gold right through, from top to bottom It ought to be uniform. It ought not to have half a yard full gold, then half a yard semi-gold, and so on.

Hon'ble Pandit M. M. Malaviya.—*Q.*—I understand you to mean that the article should be marked to show what it really is ?—*A.*—Yes, and it ought to be uniform from top to bottom Uniform means uniform in quality ; not that if the saree, or whatever it is, is designed that half a yard is gold and the rest is silver, but that the half yard of gold is pure gold.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—About the patent law : Do you want a monopoly ?—*A.*—That is only an idea.

Q.—You want that to help monopoly ?—*A.*—I said that if he was given protection for some little time, the industry will be encouraged.

Q.—For technical instruction you have given a table showing you can produce so many things. How many of the articles are marketable here ?—*A.*—This is on research, and we undertake to teach any boy who comes to learn. I don't go a step further because it is Government money.

Q.—Don't you think that, instead of having these 71 things, if you just tried for commercial use 10 or 15 and make them at a marketable price, that would be better ?—*A.*—That would be going beyond my instructions. Of course that is another branch of research ; one would be out to make it ; another would be out to put it on the market. They are all made at less than marketable price. In every one of them I have put pre-war rates, and the price at which I could make them. They can all sell at a profit.

WITNESS No. 380.

RAI BAHADUR LALA DAMODAR DAS, *formerly Additional Judge incharge of Liquidation Work at Lahore, now District and Sessions Judge, Karnal.*

WRITTEN EVIDENCE.

The birth of Indian commercialism in the modern sense of the term in this province can be traced some ten or twelve years earlier than the great Swadeshi boom of 1906-07. The credit for the conception of this idea belongs to Lala Harkishen Lal. Finding that one of the main difficulties in the way of the promotion of indigenous industries was that of finance and capital, inasmuch as the European-managed banks or the old class of money-lenders were generally averse to advance money to Swadeshi concerns except on the most approved securities or risksome conditions, he set himself, shortly after his return from England, to the promotion of his scheme of Indian banks. This principle of Swadeshi banks financing indigenous industrial and commercial concerns is all right, as an abstract proposition; but in actual practice it was perverted in the case of nearly all the banks now in liquidation, to finance the pet concerns of the common promoters or to lend money to the Directors and Managers whereby they could freely indulge in speculations. Large sums of money were advanced by the People's and the Amritsar Banks to such companies as the Upper Real Estate Company, Limited, in Liquidation (which speculated only in land) and the Pioneer Investment Company, Limited, which speculated in shares by inter-company transactions of the concerns allied to the aforesaid Banks, although none of these companies possessed any real paid-up capital. Big sums were again advanced by the Hindustan Bank to concerns like the Punjab Musical Association, Limited, in Liquidation, which was really a theatre, having no capital, and to the Punjab Brothers Company, Limited, in Liquidation, really a speculative shop at Karachi, and other concerns. The Doaba Bank advanced money to the Amritsar General and Flour Mills Company, Limited, and to the Phagwara Mills in Kapurthala State, in both of which the Directors were interested. The National Insurance Company of Amritsar had large transactions with the allied Banking Company and Rajpal and Company, started by the same promoter. The Lahore Bank, Limited, in Liquidation, advanced considerable sums of money to a Director and to its Chief Manager and also to a property dealing company and a leather factory in which its promoters were interested. The Industrial Bank advanced very big sums to its chief promoter and his concerns. All these were generally transactions of an objectionable nature, and the advances to the ginning factories were hardly better indeed. The advances of the Banks' money to the ginning presses and on shares of allied companies could not be called investments in any sense of the term. They were practically speaking speculations, especially as the ginning presses continued, on account of the easy money market, to multiply out of all proportion, and thus began to suffer from the effects of over-capitalisation and they could only be saved from ruin by the pool arrangements organised later on.

Most of the other company-promoters had no ability and qualifications, being generally men of very indifferent education and training and without any influence with their community. They made use of the Swadeshi movement of 1906-07 to serve their own personal ends, and started a number of concerns for their own aggrandisement. Verily, the Swadeshi movement has suffered not a little at the hands of these unscrupulous and incapable men. The motive of these men was as much remote from Swadeshi as the poles. They cared for nothing but to enrich themselves at the expense of a credulous public and as their concerns were invariably carried on at a heavy loss, they adopted a number of devices to cover the deficiencies. One of their favourite methods was to multiply companies, sometimes *shadi* funds, sometimes semi-commercial or other concerns under the same or allied arrangements. This had a double advantage. First, it swelled their own remuneration as instead of receiving it from one company, they could levy it from a number of concerns, and secondly, it enabled them to hide the real state of things by showing large amounts of subscribed and paid-up capital by means of bogus inter-company transactions, such as exchange of shares between these allied companies. Another common-method of theirs to show a large subscribed and paid-up capital was to allot shares to men of straw and to take from them pro-notes for the amount of their allotment money, which was thus debited to their pro-note account and credited to capital account. In the case of at least one Bank, these shares and pro-notes were bogus and the names of the share-holders had to be removed or struck off the register under Section 38 of Act VII of 1913. In order to declare a dividend in these companies, they debited a large portion of expenses to preliminaries, and treating them as assets made out a fictitious surplus, from which a dividend was declared. Sometimes, the device known as window-dressing deposits was adopted, large sums of money were deposited in floating account of various persons a day or two before the half year without any money being paid for the purposes

of the balance sheet, only to be debited to them a few days afterwards. In this way, they managed to manufacture blooming balance sheets, showing a large amount of subscribed and paid-up capital and bulky assets, and to declare dividends, whereas their Banks and Companies were really working at a heavy loss. There was, after this, no hitch to their lending money to themselves, their friends, or to the allied concerns under the same management without taking any security. Nay in many cases, even the formality of a pro-note was dispensed with, and large sums were advanced to men of most doubtful standing on overdrawn floating accounts. The employés of these Banks were corrupt in many cases, and had large sums advanced to themselves or their friends, much in excess of their security, which in several cases was not even taken. Little wonder that all these frail barks foundered at the outset of the financial storm of 1913-14 and all this mere playing ducks and drakes with the money of the public ceased.

As a matter of fact, many of these Banks and Companies were built upon foundations of sand, and the whole superstructure was consequently unstable. They were intrinsically unsound. They generally paid depositors at the rate of 6 per cent per annum and their working expenses could not be less than 6 per cent. As a matter of fact they were more. Although they had generally a small paid-up capital, they usually started a large number of branches and paid liberal salaries, travelling and halting allowances and high commissions to managing agents and canvassers. Against this, their income from debtors and investments hardly amounted to more than 8 per cent, while they generally paid dividends at the rate of varying from 5 to 10 per cent. to share-holders. It is, therefore, clear that the Banks started on these methods were intrinsically unsound and unstable.

Did these Banks help any industries, as is sometimes claimed ? The answer must be in the negative. They helped and financed some of the *shadi* funds of the scandalous type and some other concerns equally unsound which toppled as soon as the financial crutches lent by the Banks were taken away. A man like Daulat Rai never meant to start any industry, he cared for nothing else but his own gain. The only direction towards industrialism fostered by these Banks was the ginning industry but the ginning factories were not really industries. Rather most of them were superfluous, and a drag on the market. Owing to the cheapness and facility of credit, the ginning factories multiplied, as already stated, out of all proportion to the cotton producing capacity of the province, and the result was an unnatural competition in which these factory owners raised the price of cotton against each other and incurred heavy losses. Later on, owing to the pool arrangements, referred to above, they ceased work and received their share of profit on the pool. Thus the multiplication of ginning factories, one main result of these Banks, did no good at all to the province. On the other hand, their dubious methods have given a heavy set-back to trade and industries. The actual sum of money involved is well over two crores, but a much more serious result is the misery caused to thousands of poor people including widows, orphans and old men, the widespread loss of credit and the knowledge that the standard of commercial morality and efficiency in these banks and companies has been so low. It is, however, an ill-wind that blows no good. And one effect of these failures has been to stop the activities of unscrupulous men, and to make the public less gullible than before. Of course, it will take some time to recover lost confidence, but the machinery of credit will henceforth be placed on a much firmer footing than before. Legislation has also helped to this result. The Provident Insurance Societies Act, 1912, has been successful at dealing a death blow to the miserable *shadi* funds. The present Indian Companies Act, VII of 1913, will, it is hoped, do something in dealing with all forms of shady finance and strengthening honest and capable management, though it does not go far enough to achieve these objects.

It will be, however, a great mistake to overlook one important factor that is far from being eliminated under the new conditions, *viz.*, the apathy of the general body of share-holders in the affairs of the companies. It will be still possible for some active and energetic directors and managers to get whatever resolutions they want to be passed at any extraordinary meetings of the company and thereby secure validity and sanction to their own acts. From my experience as a Liquidation Judge, I have found that the right of inspection of accounts or of watching the proceedings before the Liquidation Court is seldom, if ever, availed of by the creditors and the contributories, and it remained for me to inaugurate a system of audit and check of Liquidator's accounts and to exercise a thorough and effectual control over each and sundry matters, pertaining to liquidations. Under the new Act, larger powers are given to the Registrar, Joint Stock Companies, and therein lies a safeguard against abuses. But if it proposed that Government should guarantee dividends to the share-holders of a few selected industrials in order to attract the necessary capital, much greater supervision and more effective safeguards will be necessary. I am, of course, not concerned with the questions of policy, free trade, protection or Imperial preference, but I suggest the following safeguard as a condition precedent

to any form of State grant. I propose that a committee of inspection consisting of three members, one representative of the share-holders, the other of the creditors, and a third to be nominated by the Board of Trade and Industry, to be constituted in each province, should have power to inspect and examine the accounts and call for all proceedings of the Boards of Directors and have free access to the property and premises of the companies and where necessary, put their veto upon the proceedings. This committee need not and should not have any power of interference with the affairs of the company and in the case of the directors being dissatisfied with the veto of the committee, they will have the power to refer the matter to the standing Board of Trade, who will be representative of the trade and commerce of the province and will consist of some experts or to the general meeting of share-holders and creditors. The decision of this Board or the share-holders and creditors in general meeting will be final on all matters and they shall have power to annul or rescind any proceedings of the directors. This will provide an effective safeguard against any misapplication or misuse of the funds of the company or reckless speculation. This is, in short, my scheme, the details of which have to be worked out. With such a committee of inspection and Board of Trade and Industry there will be no apprehension of waste, extravagance, or misapplication, and the Government may, if it is so advised, assist any particular industry by guaranteeing some dividends to share-holders or debenture-holders, just as it does in the case of Railways ; but I am not in favour of such kind of help, as the Government must provide sufficient safeguards to ensure the proper working of the companies, which will take away all initiative. What is really wanted is to restore public confidence in joint stock concerns and to encourage the flow of accumulated wealth of the country into them.

Evidence before the Committee of Enquiry into the causes of failures.

The Hon'ble Mr. Maynard.—*Q.*—What are your impressions of the causes which have led to the failure of the Swadeshi enterprises ?

Rai Bahadur Lala Damodar Das.—*A.*—Well, if you want to take the general causes, I will give them. The first cause I have put down here is the high rates of interest which were paid to depositors. This is, in my opinion, the first and foremost cause. The general rate was 6 per cent and in many cases more. The rate of the Bank of Bengal generally is not more than 4 per cent on an average. And this fact may be taken along with the fact that they had started a large number of branches in order to get their deposits from the poorer classes, every little town had a branch and so the working expenses naturally welled and were not covered by the income from the branches, while the money which could not be invested was not earning any interest.

Another factor was that the capital was very small, and the incidence of cost was very high. In the case of many of these banks, the capital was seldom higher than four or five lakhs. The People's Bank had 80 branches. The result was that the money cost them at least 12 per cent, 6 per cent they paid to depositors and their expenses amounted to at least 6 per cent on the capital. Now in order to conceal these things, they resorted to many devices. First of all, they debited the major portion of their recurring expenses also under the head of preliminary expenses. By the articles of Association, it is generally provided that the directors may put down a certain amount of expenses incurred in connection with registration and establishment of the company under the head of preliminary expenses which they may wipe out gradually every year. Instead of doing that, the major portion of the recurring expenses was shown as part of the assets under the head "Preliminary expenses." The gross income was practically taken to be the net income. This was the net result of this device. In order to make up their profits at the end of the year, they would debit the debtor with interest even in cases of known bad debts and add that to the income to show profit, which was thus largely fictitious.

If the amount of the principal was to their knowledge bad, they had no justification to do this and as a matter of fact, they should have wiped out the principal when the report reached them that the amount was not likely to be recovered. An ordinary bank would not do it in the case of a debt known to be bad, and they should not have declared a dividend when the income was less than the amount of expenses. It was costing them 12 per cent, 6 per cent. to depositors and another 6 per cent on working expenses due to short capital, and they could not afford to lend money on less than this rate. If you lend on a high rate, you cannot have good security. As regards Swadeshi, they rather handicapped it. The people formerly placed their deposits with these Swadeshi concerns at 6 per cent interest, but as soon as these Banks started, they put their deposits in these Banks with the inducements offered to them. Among them, there were several poor widows and orphans. The Banks used to pay interest up to 8 per cent under various pretexts. If these deposits belonged to minors, widows, orphans, or charitable institutions, they would give about 8 per cent. Their object was to get money. There has always been a cry for protective duties, but if

you charge a high rate of interest on Swadeshi concerns, you make your concerns weak. Even if Government were to levy the protective duties, it would be more than counter-balanced by the high cost of interest. It would cost the promoters of Swadeshi more to manufacture things which were to compete with foreign articles, if you charge higher interest. That goes to the root of the matter. I can prove these things by actual examples, and if you like it, by facts and figures.

The Hon'ble Mr. Maynard.—*Q.*—Let us have one example so that we may be quite sure.

Rai Bahadur Lala Damodar Das.—*A.*—I would take the case of Bank of Peshawar of Multan. There was a loss of about 70,000 rupees after two years' working. In order to conceal that loss, the Manager found after debiting every possible thing, even the recurring expenses, to preliminary expenses and after taking credit for every conceivable source of income that even then there was a deficit of Rs. 25,000 he then gave a personal pro-note for Rs. 25,000 which was debited to him and shown as income. He made it out that it was usual in foreign countries, such as America and other European countries, that the Managers and Directors bore a portion of the expenses, during the preliminary stages of those companies, so that pro-note for Rs. 25,000 may be taken as the profit of the Bank, and his salary, which was Rs. 200 a month, may be increased to Rs. 400. This pro-note may be paid out of the increase in his salary, but if he was dismissed or resigned, the pro-note will become null and void. This man got 4 years' imprisonment for defrauding the public.

The same thing took place in the case of the Hindustan Bank, which was managed by Lala Daulat Rai, elder brother of Lala Harkishen Lal. At the end of the year, when he found that he could not give dividends or show a prosperous state of the Bank, if he allowed to stand as expenses the amount of Rs. 6,000 he had drawn as his remuneration during the year at Rs. 500 per mensem, he credited Rs. 6,000 to the Bank and gave a pro-note of his hand, debiting it to his son as a supposed loan. As soon as the annual balance sheet was passed and the dividend declared, he reversed the entries. I had him prosecuted and he is now undergoing a sentence of 4 years' imprisonment. The actual offence was issuing false balance sheets for cheating and defrauding the public.

The Directors were, in their turn, dupes in several cases. I have had to deal with many of these Directors. I made them pay heavily for their lack of supervision. Many of the Directors were really fools and not villains. They agreed to become Directors for selfish motives or because they were given to understand that they were helping the cause of their country but they did not realize their responsibility as Directors, nor did they have any qualifications.

The second cause is, that nearly in all these cases the real power was vested in the Managing Director. All these Banks were one man shows, and I can also show that nearly all the Managers of these Banks had been trained and employed in the People's Bank or its allied concerns. I am going to give the instance of Lala Daulat Rai. He was Civil Nazir in the Dera Ghazi Khan District. He retired at the age of 45 years on a medical certificate. If he was capable of big feats subsequently by starting different concerns and companies, he was certainly not unfit to discharge the duties of Civil Nazir, and I have got his statement before me. This man got a pension of Rs. 20. When he started the Hindustan Bank, he got his remuneration as Managing Director fixed at Rs. 500 a month, and he started 9 other concerns from which he received handsome remunerations of about Rs. 1,000 per mensem in addition. There was a concern of the Hindustan Bank which was called the Musical Association. They really started a theatre, and that company had a loss of 40 or 50 thousand rupees with practically no capital of its own. The Managing Director of the Hindustan Bank was also the Managing Director of this and other concerns. They were losing heavily every year. The lenders and the borrowers were the same. They advanced money recklessly. I was just saying that the Managing Director of the Hindustan Bank rose to the post of Civil Nazir in the Dera Ghazi Khan District, left Government service after 20 years' service and joined the concerns of his brother, Mr. Harkishen Lal, and afterwards started several concerns of his own, such as Hindustan Bank (registered 27th July 1906 with 20 branches), Punjab Brothers, Limited (registered 1906 with 21 branches), Multan Spinning and Weaving Mills (registered 1908), Ginning Press, Punjab Flour Mills, Bharat Literature, Punjab Musical Association—really a theatre—and Punjab Leather Works. All these 9 concerns were heavily in debt to the Hindustan Bank. I have not been able to get even a fraction of the money that had been advanced to them. He was Managing Director in all these. All these failed on account of bad management. I can show that these Banks and all their concerns have done a great deal of harm to the country.

A gentleman has started a network of ginning and cotton factories and presses and put up flour mills. He has borrowed 10 lakhs from the Punjab National Bank and the Co-operative Bank. The latter Bank thus locked up its money in a big concern like this, and when there was a run on the Bank, it came to grief.

Sound bankers would not advance money to be locked up in iron and bricks. If you go to the Bank of Bengal or the Alliance Bank, they would always like to keep their money in liquid form on good security. Ninety lakhs of rupees out of a crore or so in the People's Bank have been sunk in machinery and buildings, and the liquidators would not get even half of that money in less than ten years. The mill property may be worth 5 lakhs, but if it is sold in the market it would not fetch a fraction of its cost. If all the funds of a bank are invested in immoveable property, it is very unsound in principle. If the money is invested in liquid securities and partly in immoveable property, it is different.

The Hon'ble Mr. Maynard.—Q.—The fault of these Banks was that they advanced too much money on unliquid security. Was there any liquid security in connection with these industries?

Rai Bahadur Lala Damodar Das.—A.—The advances should have been made on goods or raw material with adequate margin.

The Hon'ble Mr. Maynard.—Q.—What I am trying to get at is this that for the purpose of financing industries, these short-term advances will not be required. This requires long-term advances.

Rai Bahadur Lala Damodar Das.—A.—They may make advances to the extent of 20 or 25 per cent. of the cost of the machinery. But they advanced too much. The concerns were started with insufficient capital. The starters had no capital of their own and had to borrow the whole of the money for working expenses. When the Punjab National Bank was started, the late Mr. Lal Chand, as a shrewd businessman, objected to advance money more than the paid-up capital.

The Hon'ble Mr. Townsend.—Q.—Unless the Banks had not advanced so much money on unliquid securities, the industries would not have been started at all.

Rai Bahadur Lala Damodar Das.—A.—But these industries have not done any good.

The Hon'ble Mr. Maynard.—Q.—Why did these people not invest in industries, and why did they invest in Banks?

Rai Bahadur Lala Damodar Das.—A.—Many of these depositors were investing in factories. But when these banks were started at their very doors, they put in their money in them. The Banks were able to get the money by establishing numerous branches and holding out various inducements. The Branch Managers adopted all sorts of devices, because their remuneration and their very employment depended upon getting good deposits. The managers were often paid by percentages.

The Hon'ble Mr. Townsend.—Q.—One of the reasons is the want of businessmen as Managers.

Rai Bahadur Lala Damodar Das.—A.—That is very true.

The Hon'ble Mr. Townsend.—Q.—You have no reason that the directors were dupes.

Rai Bahadur Lala Damodar Das.—A.—In some cases they were, but not in all.

I think that the majority of the directors were personally interested. They borrowed money from these Banks themselves and advanced large sums to their friends and relatives without adequate security. I think it is unsound in principle that the borrowers and lenders should be the same persons. In many English Banks' Articles of Association, there is a provision that the director, who is going to borrow any money from the Bank, should not be present at the meeting before which this question is to come up. As a matter of fact, the directors were sitting and passing judgments on themselves, I think that in all sound banking the directors should not borrow money themselves. One chief reason of failure is that the lenders and the borrowers of these Banks were the same.

As to the question of auditors, I think the auditors, whether European or Indian, were no good. I attach little importance to their services.

The clerks of one Bank were checking the accounts of another Bank. They had no training and they were absolutely useless. Had there been proper auditors, I would not have had to take the trouble of checking accounts myself. I have had practically to audit the accounts myself. There is the firm of Messrs. Nelson King and Simpson, of which Mr. Dignasse is the head. No one could pay them sufficiently well in order to go into these details. It is not merely checking the accounts. The auditors' duties are manifold. They are at present no auditors in the real sense of the word. They are merely accountants.

The Hon'ble Mr. Townsend.—Q.—We have been told that there is a great need for Indian auditors.'

Rai Bahadur Lala Damodar Dass.—*A.*—That is true, but they must be trained. They must all undergo the accountancy test in Bombay or elsewhere. First of all they must receive good educational training and be apprenticed in England or Bombay where there are societies of Incorporated and Chartered Accountants. There is nothing like that in this country and this is very much lacked in this country. For the future, if the companies are to be properly checked, there must be properly qualified auditors to find out these tricks. Had they done their duty, they should have found these tricks long ago. They ought to have pointed out all these things. Such certificates, as they gave, were not correct. They did not go into details. They did not give them after checking the accounts properly. Had they done it, it is impossible that they should have overlooked these clear mistakes and frauds as well as jugglery in accounts.

The Hon'ble Mr. Townsend.—*Q.*—Has the Indian Companies Act, 1912, been in force long enough to have any result ?

Rai Bahadur Lala Damodar Das.—*A.*—Inappreciable.

The Hon'ble Mr. Townsend.—*Q.*—How many share-holders turn up at a meeting ?

Rai Bahadur Lala Damodar Das.—*A.*—The Managing Directors and the clerks who have got shares. They form a quorum. They give shares to the clerks to form a quorum. The other share-holders seldom care to attend. In the case that I started in Rawalpindi, the Managing Director gave some shares to his own clerks, giving them the assurance that they would not be called upon to pay, and that he would pay himself. The Managing Director, Mr. Gopi Chand, signed a voucher by which he debited the amount of these shares to interest account. Afterwards when it was brought to his notice that it was illegal then he gave a cheque of his own for the amount in order to relieve the clerks of the liability on the shares. These shares were given to these people simply to have the advantage of forming a quorum, and their votes.

(After reading his written evidence about the Board of Inspection and Control.)

I have taken it from the provisions of the Municipal Act. In the Municipal Act, the Deputy Commissioner as an executive officer has got the power of vetoing any resolution of the Municipal Committee subject to reference to the Commissioner whose decision is always final. In the Imperial Executive Council, the Viceroy is always a member of the Council. If the Council passes a resolution by a majority of votes which the Viceroy does not consider advisable in the interests of the country, he can place his veto upon that matter and refer the matter to the Secretary of State whose decision is final. My scheme provides for the representation of all. Under the law as at present stands, the creditors who have substantial interest have no voice. Under my scheme they have one representative, the share-holders, another and the third man is to be nominated by the Board of Trade as an expert. Therefore, the members of that Committee of Inspection for each Bank or each Company should have the power of calling for the records or books or have free access to them and the property of the Company or its operations. If they consider it necessary to place their veto on any proceedings of the Board of Directors coming to their notice, they should simply intimate to the Directors that they place their veto on such and such of their proceedings. In case the Directors are dissatisfied with the decision of the Committee, they can refer the matter to the Board of Trade or general meeting of share-holders and creditors. In England, I believe, there is a Board of Trade consisting of commercial and industrial experts. The Committee of Inspection I have proposed should act as an intermediary between the Board of Trade and the Directors. Supposing I am a share-holder, I find that the Directors are not acting rightly. All that I have to do is to bring the matter to the notice of the Committee of Inspection. If they find that the Directors are not doing the right thing, they can veto it, but they should not actively interfere with the Directors. We should not take away their initiative. They should simply exercise the power of veto. If the Directors feel dissatisfied with the veto, they can appeal to the Board of Trade or to the share-holders and creditors in general meeting, and their decision will be final.

The Hon'ble Mr. Townsend.—*Q.*—Have you any view on the subject whether there is much capital available in the Punjab ?

Rai Bahadur Lala Damodar Das.—*A.*—Certainly, there is no lack of capital in the Punjab, though, as compared with the other provinces, it is poor. With the safeguards mentioned above, if the public is assured that there is going to be no mismanagement or fraud, capital will be forthcoming in sufficient quantity. The moral support of Government will be quite sufficient.

The Hon'ble Mr. Townsend.—*Q.*—It has been suggested to us that Government should institute some system of hall-marking prospectuses of companies before they are allowed to go before the public. These prospectuses should be thoroughly examined in a Government office, and this should be made compulsory under the Companies Act.

Rai Bahadur Lala Damodar Das.—*A.*—I think it is a sound proposal. I should first create a Board of Trade and Industry for each Province.

The Hon'ble Mr. Townsend.—*Q.*—You would give the Board the power of passing the prospectuses.

Rai Bahadur Lala Damodar Das.—*A.*—Yes.

The Hon'ble Mr. Townsend.—*Q.*—Don't you think that by doing so, it would to some extent involve Government.

Rai Bahadur Lala Damodar Das.—*A.*—No. Under the new Companies Act, in the case of limited companies which do not go to the public for subscriptions, Government may not enquire anything at all, but if they want to appeal to the public for funds, then Government has a sort of responsibility to the people, and they should see that the conditions are fair and square, because that will restore confidence. The Committee of Inspection and Board of Trade that I have suggested will exercise a sort of supervision or vigilance over the affairs of the Company. It is essential that the Board of Trade should scrutinize carefully the chances of success of particular industries proposed to be started as a limited concern, and give their opinion which will be of great help to the people wishing to encourage swadeshi enterprise on sound lines.

The Hon'ble Mr. Townsend.—*Q.*—It has been suggested that a sufficient amount is not allowed for depreciation.

Rai Bahadur Lala Damodar Das.—*A.*—That is quite true. If there was not sufficient income to cover the expenses, how could they provide for depreciation. That is why they have had to resort to all sorts of devices.

The Hon'ble Mr. Townsend.—*Q.*—Have you anything to say that dividends are paid out of capital.

Rai Bahadur Lala Damodar Das.—*A.*—I started by saying that all sorts of devices are resorted to in order to declare dividends without real profits. These dividends were generally paid out of creditors' money. Practically there was no capital left, as it was swallowed up in preliminary expenses and bad debts.

I would like to make a certain percentage of paid-up capital compulsory before a company is allowed to start. A certain proportion should be fixed. I should not allow any company to come before the public unless at least half the capital has been paid, not in pro-notes. For instance, I give you an instance. In Multan a gentleman started a company. The Articles of Association provided that as soon as the capital was subscribed to the extent of one lakh of rupees, he would begin drawing Rs. 100 a month as pay. He was a man of straw but allotted to himself Rs. 99,600 shares so that he was entitled to Rs. 100 a month. He got about 7 or 8 thousand rupees as pay from the money he received as deposits. He is now suffering four years' rigorous imprisonment.

First of all he started an Anna Bank. All his figures were in annas. Accounts were kept in annas, and shares were shown as 2,000 annas shares and so on. From that he converted it into a Sovereign Bank.

The Hon'ble Mr. Townsend.—*Q.*—Have you got any other suggestion ?

Rai Bahadur Lala Damodar Das.—*A.*—I think Government should also make arrangements to give expert advice to people who really want to start industries, and those experts should possess not only the expert knowledge but should also study the industries from the commercial standpoint. Government should have a Standing Board which should examine into the possibilities of these trades and industries along with expert advice, and study the matter from the commercial and practical point of view and then as you say do the hall-marking which may take the shape of a mere advice.

Supposing I wish to start an industry. I am quite new, but the idea comes into my mind. There should be a Board which should advise me and give me expert advice as well as say whether the industry is likely to be successful or not. This is very necessary. There are many men here, men of capital, who want to start, but they are not sure that they will fail or succeed. The real trouble in my opinion is the competition with other countries. Unless the factories started here are on a pretty big scale, there is no chance of success. I do not think there are men with capital in Punjab who will come forward with all this money. Therefore it will be necessary to have joint stock companies. I think people will invest money if Government will lend its moral support.

The Hon'ble Mr. Townsend.—*Q.*—Lala Panna Lal of Ambala asked me to recommend him for a grant of Rs. 2,000 on the ground that if Government gave it, he would be able to get shares from the people.

Rai Bahadur Lala Damodar Das.—It is true as it will be looked upon as a moral support by Government. I know something of the Ambala Glass Factory. When I was in Ambala, there was one Mr. Kalus, an Austrian gentleman, who was brought out as an expert. The Directors thought it useless to pay so much to that man, and his services were dispensed with. Mr. Kalus brought a suit against them before when I was in Ambala. That man got a decree, but he went away. The result was that they could not work the glass factory, without an expert and came to grief and went into liquidation. It was purchased by Lala Panna Lal or his brother Than Singh. Many of the Swadeshi concerns, in Cawnpore and elsewhere, have passed through liquidation. They have been purchased rather cheap. The cost of glass factory was something more than a lakh, but he bought it for Rs. 25,000.

The Punjab industries are under-capitalized, and there are no proper persons to manage them, because apart from my experience as a Liquidation Judge, I have been in some form or other connected with these mills and factories for the last 25 years. The share-holders of the Krishna Mills, Delhi, asked me to go to Bombay and make enquiries whether they should extend the mills or not. Then I went to Gokuldas Murarjee (who is the Managing Agent of a firm—(Rs. 500 worth shares of whose mills are selling for Rs. 3,000 or so.)

He said that the gentlemen who want to manage the said mills knew nothing about it and that with the present management it is bound to come to grief. He said that there must be an expert who knows how to buy cotton, how to sell its yarn and how to turn it into yarn and cloth and so on. They have experts in Bombay simply because there are big firms. It is absolutely hopeless to start a factory here with a capital of Rs. 50,000 or so.

ORAL EVIDENCE, 14TH DECEMBER 1917.

Sir F. H. Stewart.—*Q.*—A great deal of your evidence consists of evidence which you gave before a small committee which was appointed by the Punjab Government ?—*A.*—Yes.

Q.—I do not propose to take you through that because we are not concerned with the liquidation of the companies involved. Beyond that it is of importance to our enquiry to find out what were the causes of the failures ?—*A.*—I have stated them in my note.

Q.—I think personally we are fairly clear now, but there are one or two points that strike me. I do not quite understand the Committee of Inspection which you propose. Is that only when a company is going into liquidation ?—*A.*—I say when the company is going to be started.

Q.—All companies ?—*A.*—All companies.

Q.—Do you think that necessary ?—Will you get responsible business-men to take up the position of directors ?—*A.*—Why, I do not interfere with the directors at all.

Q.—I am asking you particularly in respect to initiative and responsibility ?—*A.*—I make a provision there ; that is, the Committee of Inspection will not interfere with the directors, but if they find it necessary they would put their veto.

Q.—You are not interfering with the directors ?—*A.*—Not actively.

Q.—You are giving this Committee of Inspection a veto over the directorate ?—*A.*—Well, the fact of the matter is, I have proposed this Committee of Inspection, for the protection of creditors we have got larger interests in a concern. Now they have got no voice. Some means must be found in order to protect them. Suppose you have a company with an initial capital of say Rs. 5,000 and there are creditors of the company for Rs. 50,000 and they have absolutely no voice in the management of the company ; in such cases some means must be found to give the creditors some voice.

Q.—Don't you think that the Indian Companies Act provides sufficiently for this ?—*A.*—The Indian Companies Act does not make any provision for it.

Q.—The responsibility of the directors is defined there, is it not ?—*A.*—But supposing a director took shares of 5,000 rupees and I advance a lakh of rupees as a loan to that company, but if through some foolish act of that director the company suffers loss, he loses only Rs. 5,000, but I lose a lakh of rupees, being powerless to control his act.

Q.—Do you think that there is any need for special banking legislation ?—*A.*—I think so.

Q.—On what points in particular ?—*A.*—As for instance, the first thing is to lay down the rates of interest, because as I have pointed out in my note, the real trouble in the Punjab began with the high rates of interest, and generally these banks are giving sometimes as much as 8 per cent.

Q.—Would you prevent a bank by law from giving more than a certain rate of interest ?—*A.*—Not by law, but by rules, made for instance by the Board of Industry and Trade.

Q.—I was asking you if you want special banking legislation, and you said 'yes'.—*A.*—I mean by that legislation to provide by rules to give authority to some body like a board of inspection to try and regulate the rate of interest, though not by direct legislation.

Q.—And you would like to see the proportion of paid-up capital defined ?—*A.*—Yes, before the company is started, because under the new Companies Act there is a proportion fixed.

Q.—You seem to have found the liquidation proceedings unsatisfactory ?—*A.* Yes.

Q.—Would you like to see a Government of India official liquidator appointed with an adequate staff ?—*A.*—Well, the difficulty has not been due to liquidators, but the difficulty has been due to the muddled state of the companies' affairs, and secondly, there was no trained man to take charge of the liquidation.

Q.—You mean rather that before liquidation the accounts had not been properly kept ?—*A.*—Yes.

Q.—I do not understand your remark about the liquidators in your note, you refer to a firm of local auditors and accountants and you say no one could pay them sufficiently to go into these details ; but presumably a business arrangement was made with them by Government or whoever appointed them ?—*A.*—I do not know. What I know is that the companies were paying 50 rupees and 100 rupees to their auditors ; no respectable firm of auditors would take up the work for 50 rupees and 100 rupees.

Q.—Anyhow you think there is a great need in this province especially for proper training in auditorship and accountantship ?—*A.*—Yes.

Q.—Is there any means of obtaining that training in the province at present ?—*A.*—None such, it may be had in Bombay perhaps, but not here.

Q.—There has been a diploma course recently instituted by the Bombay Chamber of Commerce. Would you like to see something of that sort here ?—*A.*—Yes.

Q.—I should like to ask you a question about the general trend of your evidence. Don't you think that you are proposing to treat trade and industry too much, as Government institutions. Will trade and industry develop under all this restriction ?—*A.*—What I say is these bank failures caused a great set-back, and we have to restore public confidence in order to attract capital ; of course if there are a few men of big capital who will start industries with their own money, that is another matter, but if you want companies to be started with the public money you must restore confidence, there are two means suggested, one is that Government should directly control the staff, the second is, if you have proper control, you may be able to restore confidence ; if gradually public confidence is restored this condition may be relaxed, but unless and until there is control by such a board as I suggest, I do not think you will be able to attract capital, past experience shows that.

Q.—And your committee will frame the prospectus. I think that is your proposal is it not ?—*A.*—I do not say so exactly. I simply say Government or the Board of Industry would give advice whether a certain industry is likely to succeed.

Q.—Will they have power to stop one being started ?—*A.*—If they find some industry was not likely to succeed ; but the trouble is about capital. Supposing the idea comes into my head to start an industry, I proceed at once on my own idea and a few friends come forward to help me, I may be wrong, I may have no experience, the company or the industry may fail. It is necessary therefore that there should be some expert advice, not from the technical point of view, but the thing must be studied also from a commercial point of view, whether it is likely to succeed. There are many industries which theoretically are possible but their practical and commercial side should be studied.

Q.—And who is going to form a competent opinion on the subject ?—*A.*—That is why I say that you must create a Board of Industry and Trade, consisting of experts and they should scrutinise the chances of any industry, whether it is likely to succeed in a province, say like the Punjab, or not.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Who will be responsible for the prospectus in this board ?—*A.*—Nobody will be responsible, they will be giving their advice.

Q.—According to the present Act if you make a prospectus you shall have to say that the board of directors or the promoters are responsible for it, but shareholders can sue them : If you have official men as you propose in your Committee of Inspection, will Government be responsible for any mistake in the prospectus ?—*A.*—Not in the least.

Q.—Once Government gives opinion through this official board, Government takes responsibility for the whole of the prospectus ?—*A.*—What I say is before scrutinizing the chances of a particular industry, Government must be able to give their opinion, whether in their opinion it is likely to succeed or not ; I make it perfectly clear that it will not bind Government in any way.

Q.—If you put that Government gives opinions without any responsibility, that opinion will be worth nothing ?—*A.*—Never mind, it will have a great deal of influence with the public.

Q.—Even if Government put on the top " We are not responsible "?—*A.*—Quite so, they do not want a sort of guarantee.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—In answer to Sir Francis Stewart you said that special banking legislation is necessary. Do you want this legislation for helping industries of the province ?—*A.*—Yes.

Q.—And you want a Committee of Inspection consisting of three members, one member representative of shareholders and elected by them ?—*A.*—Yes.

Q.—The other representing the creditors elected by the creditors ?—*A.*—Yes.

Q.—And the third an expert nominated by Government ?—*A.*—Yes.

Q.—A Board of Industries will be constituted in each province ; it should control the boards of directors of companies ; is it not ?—*A.*—If you call it control.

Q.—Suppose the directors of a company want to do some business, will these three people be able to stop it ?—*A.*—The general meeting of shareholders or creditors can overrule the Committee of Inspection.

Q.—May I know how the work can go on ; if constantly this inspection is going on and constantly meetings are going to be held ?—*A.*—You presuppose that this Committee of Inspection will be interfering at every step, this is only a sort of precaution.

Q.—They can inspect every time when they want ?—*A.*—Yes.

Q.—Even in banks in every-day business, a committee of directors go every day to the bank but they also allow the manager power to manage every thing. All the big institutions in India have been managed like that, have they not ?—*A.*—Yes.

Q.—Do you think that these inspectors, these three people, which you contemplate, should always, every day be controlling the directors ? They will be practically running things themselves ?—*A.*—Why do you suppose they will be interfering every day ?

Q.—They have the right ?—*A.*—They have the right certainly.

Q.—And do you think that under the new Act, large powers are given to the Registrar as a safeguard against abuse ? Do you not think that a respectable director is as responsible as the Registrar. Do you not think so ?—*A.*—My experience of directors, at least in the Punjab. is altogether different from what it may be in other provinces.

Q.—You want legislation for the Punjab only ?—*A.*—I am speaking only of the Punjab and not of any other part of India.

Q.—By such legislation you will avert banking failures in the Punjab ?—*A.*—Yes.

Q.—But do you know that banks have failed in Bombay, thousands of banks have failed in London too, in Europe, America and everywhere ?—This was the first effort here and now don't you think they will be more cautious and they will entrust their money to the management which is best ? Is this not human nature ?—*A.*—The fact of the matter is this : banks may have failed in other provinces through losses, but in the Punjab the bank failures have been due not to unforeseen losses but the banks were intrinsically unsound and their failures were no doubt in some cases due to fraud on the part of their directors.

Q.—Even in Bombay we had good expert managers of banks, and they managed great banks, and they turned out as big frauds as others, and the same was the case in

England. When the banks failed, there was a broad open trial in Bombay ; the bank of Bombay also failed in the beginning ; but with all these failures and without this strong legislation which you recommend we are flourishing and starting banks with 13 crores of capital. Don't you think that your proposal will hinder the progress of banking ?—*A.*—I think it will strengthen it.

Q.—This was the first effort, don't you think so, this was the first beginning of banking in the Punjab ?—*A.*—That is unfortunately true.

Q.—But everywhere in the world there have been failures at first ?—*A.*—Yes.

Q.—You still think that your proposal will not hinder development ?—*A.*—I think it will improve things and restore credit.

Q.—Then you say, " I think the auditors whether European or Indian were no good." Have you European auditors too ?—*A.*—Yes. There were some Europeans, but who called them auditors ? They were not auditors in the real sense.

Hon'ble Pandit M. M. Malaviya.—*Q.*—Which banks had you to deal with in the liquidation courts in the Punjab ?—*A.*—All the banks except the People's and Amritsar Banks.

Q.—All except the People's and Amritsar Banks ?—*A.*—Yes.

Q.—Then I take it that your remarks relating to these two banks, the People's and the Amritsar Banks, are not based upon the knowledge derived from your liquidation proceedings ?—*A.*—From some companies, which were off-shoots of the Amritsar and People's Banks with which I was dealing.

Q.—So far as these banks were concerned you had not to deal with their liquidation proceedings. I take it then that you have no knowledge as a judge of the affairs of these two banks ?—*A.*—None whatever.

Q.—You have given here general remarks regarding the character of the management of the banks with which you have had to deal as a judge, did the managers of the banks have an opportunity of explaining their conduct before you ?—*A.*—There was a pubilc examination, they were publicly examined.

Q.—And their books were examined ?—*A.*—Yes.

Q.—You say here that one of the causes of the failures was the high rate of interest ?—*A.*—Yes.

Q.—And the second cause you give here is that these banks invested their money in industries ?—*A.*—No, no, excuse me, I say in industries of which they were common directors.

Q.—That is your objection : you don't object to their having invested money in industries ?—*A.*—Certainly not, only a certain proportion of it : what I object to is that these managers were managers of the banks as well as of the industrial companies with which these banks had dealings.

Q.—How many were the banks the proceedings of which were before you roughly ?—*A.*—About 50 banks and companies.

Q.—And of how many of these banks you would say that this remark would be true ? I just want to know whether it applies generally or only to particular banks ?—*A.*—I have given specific instances.

Q.—I do not want all that, I want to have an idea as to the proportion of these 50, whether three-fourths or half or one-fourth or whatever it may be, as to the proportion of these banks to which your remarks apply ?—*A.*—Four-fifths I should say.

Q.—That the directors of these banks did, as directors of the companies, lend money to themselves as borrowers ?—*A.*—As borrowers, yes.

Q.—What percentage of the directors ?—*A.*—I should say about three-fourths or four-fifths.

Q.—Four-fifths of the directors of these banks had borrowed ?—*A.*—Directors of the allied concerns.

Q.—I am speaking of banks, let us confine ourselves to that : four-fifths of the directors of these banks, three-fourths to four-fifths had borrowed money from these banks in their private capacity ?—*A.*—Not in their private capacity, but as directors of allied concerns.

Q.—Did the directors also borrow money in their private capacity ?—A.—Yes, to a very large extent, about three-fourths.

Q.—Do you say that about three-fourths to four-fifths of the directors of the concerns, the proceedings of which were before you in liquidation borrowed money in their private capacity from these banks of which they were again directors ?—A.—Yes.

Q.—Was it a very large amount ?—A.—Sometimes it was very large.

Q.—But generally small?—A.—Yes, but beyond their means.

Q.—In the case of three-fourths to four-fifths ?—A.—Yes.

Q.—You say here that they were generally speculations of a shady character: what was the speculation that you have in mind, generally speaking what was the character of the speculation ? Was it gambling in silver, in grain or what ?—A.—Are you asking about any particular company ?

Q.—You say generally all these were generally speculations of a shady character ?—A.—Well, the musical association for instance.

Q.—That is what you mean by speculation ?—A.—In leather works and jewellery works and cinema works, where there was nothing practically done.

Q.—I want to get at what you mean by speculation : what do you mean by saying that there was practically nothing done ? Was there no leather works started ?—A.—I do not say so.

Q.—You will not be positive ?—A.—When I came to sell the factory, it was sold for 300 or 400 rupees, the factory had cost something like 20,000 rupees.

Q.—But there was a factory and it did cost 20,000 rupees ?—A.—Yes.

Q.—Then why would you call advancing money to that factory a speculation ? When the money was advanced there was a factory which did cost 20,000 rupees, was it not ?—A.—Of which not more than 5,000 rupees was visible.

Q.—When the money was advanced was it worth Rs. 20,000 ?—A.—When I said it cost Rs. 20,000, I meant it cost in the books Rs. 20,000.

Q.—You cannot say whether it really did or did not cost so much ?—A.—I know that it was estimated, but it was found to have cost not more than Rs. 5,000.

Q.—It had been overcharged, over-priced ?—A.—Yes.

Q.—Very well, that is what you mean by speculation ?—A.—Yes, speculation in one sense because these companies had no capital of their own.

Q.—You mean to say that these advances had been made on insufficien security ?—A.—Yes.

Q.—That is what you mean by speculation ?—A.—Yes.

Q.—You don't mean they speculated in silver as in Bombay or in grain ?—A.—Not in that sense.

Q.—You say that the present Indian Companies Act does not go far enough to achieve the objects which you have mentioned ?—A.—Yes.

Q.—Have you had to deal with many companies which have come into existence since this Act was passed ?—A.—Only a few.

Q.—And you base this remark of yours upon the experience you have derived in dealing with those few ?—A.—Yes.

Q.—You complain here of the general apathy of shareholders in the affairs of the companies. That is a matter of general complaint, we have heard much about it ; but you say that when the proceedings were going on in the liquidation court, not many of them would turn out to see and check accounts. Is it peculiar to the Punjab or is that the story of all liquidation proceedings of banks ?—A.—I have not much experience of other provinces, I am speaking of the Punjab.

Q.—Before writing this note and putting it before the committee. did you spend any time in studying the failures of banks in England or in America or in Germany ?—A.—No.

Q.—You said you want a revised Act, a more stringent Act, didn't you ? You want more stringent banking legislation ?—A.—I do, yes.

Q.—And you think that will be a safeguard against failures ?—A.—I think it will restore public confidence.

Q.—The Act will ?—A.—I mean to say there must be some more control, but that control I do not give to any Government, but I give to the Committee of Inspection and Board of Trade.

Q.—You think the confidence will depend more upon legislation than upon the actual men who are carrying on a business who are engaged in the business ?—A.—You want some sort of check, and the shareholders are supposed to exercise that check, but as a matter of fact these shareholders never take any interest ; therefore you have got to make some change to check the directors in the initial stages.

Q.—You made a remark in answer to Sir Fazulbhoy that in many instances they were due to fraud on the part of the directors ; I did not exactly catch what you said ; did you mean the failures ?—A.—Yes. I did not say directors, but managers or managing directors ; I have said in many cases the directors were quite honest, they were rather dupes.

Q.—You mean that in many instances the failures were due to the fraud of managers and managing directors ?—A.—Yes.

Q.—You have spoken of the preliminary expenses being rather heavy : are you aware that in floating companies, joint stock companies and concerns in the west, a certain amount is put aside to meet these preliminary expenses as necessary and unavoidable for advertising, for organisation, etc. ?—A.—Quite so, I understand that is so, but then how long ? Here you have recurring expenditure for a number of years and the amount of preliminary expenditure exceeding the total amount of the dividends paid throughout the existence of the company.

Q.—But if a certain amount of preliminary expenses have to be incurred, then the mere fact that these were spread over three or four years would not by itself be an objection ?—A.—No.

Q.—You object that dividends should have been paid when dividends were not earned, that is your real objection ?—A.—Yes.

Q.—But if preliminary expenses must be incurred and if the company has properly shown them as preliminary expenses then there would be no objection ?—A.—What I mean to say is that preliminary expenses mean any expenses incurred in connection with the registration of the company and of course expenses incurred in advertising and printing, stationery and such items during the first year. Preliminary expenses do not mean the salaries given to the managing director and other directors for a certain number of years. That is the thing which as I have pointed out has been done here. In any well-regulated company, these preliminary expenses should go down every year, but in the case of the companies I have been dealing with, I can give you any number of instances, that these have been mounting up every year from Rs. 5,000 to Rs. 10,000, Rs. 15,000, Rs. 30,000, Rs. 35,000 and Rs. 40,000 and so on.

Q.—Then it was not a case of one lump sum having been spread over more than one year ?—A.—No, no, I do not object to that.

Q.—Speaking of a certain bank and a certain gentleman having started a network of ginning and cotton factories, you say " the latter bank locked up its money in a big concern like this and when there was a run on the bank it came to grief ?" Do you know that excepting the Bank of Bengal and the Presidency Banks, many other banks take mortgage of immoveable property and lock up their money in that way for a number of years ?—A.—Do they lock up 80 per cent ?

Q.—You say that the fault of these banks was that they advanced too much money on unliquid security ?—A.—I say if they advanced up to 20 per cent or 25 per cent on immoveable property and industries, there would be no harm done.

Q.—So you only object to the extent of such investment ? You don't object to it in principle ?—A.—Not at all.

Q.—You say here " sound bankers would not advance money to be locked up in iron and bricks. If you go to the Bank of Bengal or the Alliance Bank they would always like to keep their money in liquid form on good security." Have you any personal knowledge of the affairs of these two banks or was it merely a supposition you stated ?—A.—I have no personal knowledge.

Q.—That they keep their money in liquid form ?—A.—The bulk of the money, I don't say all. In the case of the Bank of Bengal they are not permitted according to their constitution to invest in immoveable property.

Q.—They are bound by their constitution, but do not the Alliance Bank of Simla advance money on mortgages ?—*A.*—I have no personal knowledge that they do this ?

Q.—You say 90 lakhs out of a crore or so in the People's Bank had been sunk in machinery and buildings. I take it that this is not from your personal knowledge ?—*A.*—No. that is what I gathered from the published reports.

Q.—In answer to a question by the Honourable Mr. Maynard, whether there was any liquid security in connection with these industries, you have said here that the advances should have been made on goods or raw-material with adequate margin. Now you are aware that several of these banks have paid up part of their depositors, I mean some 16 annas, some 12 annas, some 8 annas, and so on: are you aware what liquid security there was in several of these banks when they closed their business ?—*A.*—When you are talking of 16 annas, those 16 annas and 12 annas have been paid after recovery from unfortunate shareholders, not from the assets of the banks.

Q.—Is it so ?—*A.*—Yes, in the majority of cases.

Q.—Do I understand you to say that the payment of 16 annas to the depositors has been brought about by drawing upon the shareholders ?—*A.*—Yes, certainly.

Q.—Not from the assets of the companies ?—*A.*—Not at all, in the case of nearly all the banks that I have been dealing with, I have paid at least 12 annas in the rupee and in some 14 annas and sometimes 16 annas and a good proportion of the money was represented by the recoveries which I have made from the directors on account of their misfeasance. In the case of the Peshawar Bank, for instance I recovered Rs. 75,000 for their acts of misfeasance : that is how I was able to pay 16 annas in the rupee.

Q.—Do you say that that applies to many banks ?—*A.*—Yes.

Q.—You say here that these industries have not done any good : that is rather a sweeping observation ; is it not ?—*A.*—I refer to those particular industries which were started by the companies in liquidation ; I am not talking of all industries.

Q.—You were asked by the Honourable Mr. Townsend " unless the banks had not advanced so much money on unliquid securities the industries would not have been started at all :" and you say here that the industries have not done any good ?—*A.*—I mean the industries which came into liquidation.

Q.—Then in reply to the question " why did these people not invest in industries, and why did they invest in banks," you say " many of these depositors were investing in factories, but when these banks came into existence they put in their money in them :" Was this going on in many places in the province, that these men who became depositors had been investing in industries ?—*A.*—I know a great many instances in Delhi. For instance, in Krishna Mills these people were depositing their money at 5 to 6 per cent per annum.

Q.—That was a general remark ?—*A.*—That was general.

Hon'ble Mr. H. J. Maynard.—*Q.*—As regards speculation do you happen to know anything about the Upper India Real Estates Company ?—*A.*—Yes, I know something about it.

Q.—What happened in that ?—*A.*—Well, it was started by about 7 or 8 individuals, and the paid-up capital of this company, I think, was about 3,000 or 4,000 rupees, not in hard cash, it was all spent in expenses, and the People's Bank advanced something like 3 lakhs to this company. As far as I understand they were buying up land, and selling land and speculating in land.

Q.—Was there any income at all ?—*A.*—No, it was a one man concern practically, and I think this company was running at a profit inasmuch as the price of land increased mainly afterwards, since it began its purchase.

Q.—But it finally went into liquidation ?—*A.*—Finally it went into liquidation because the company owed 3 lakhs to the People's and Amritsar Banks, and the banks made demand, and then the directors of these banks went into liquidation ; afterwards they had made a sort of settlement with the directors of the People's and Amritsar Banks, by which all their property which was profitable went to the directors of the banks.

Q.—You said it had Rs. 3,000 capital ; it had as a matter of fact I think Rs. 16,600, and the loan was not 3 lakhs but 15 lakhs ; the figures are not quite correct.

WITNESS No 381.

MR. LIONEL HEATH, *Principal, Mayo School of Art, Lahore.*

WRITTEN EVIDENCE.

I GIVE the following views upon industrial matters as a result of my experience as a craftsman at home and here and an Inspector of Industrial Schools in this Province for the last six years. As Principal of the Mayo School of Art I have learnt something of the motives that move a student to seek knowledge in crafts, and I have learnt that in the majority of cases students join that school with the ulterior purpose of getting Government employment as Drawing teachers, craft teachers, or draftsmen. This is not all to the bad; they hand on the training they have received, but it is generally in a very diluted form. I would rather see the craft student return to his home in larger numbers.

I am chiefly interested in the preservation and improvement of village and cottage industries, and I notice that as soon as you take a boy from his village and educate him with book learning he is lost to his hereditary calling. My hope therefore is to see a minimum of book knowledge followed by technical training in a definite direction and to see the craftsman got at in his village with all the resources that science and art gives us. It is with this object that I advocate industrial schools in the industrial districts and taking our knowledge to his front door in the form of peripatetic experts and local exhibitions.

I should like to see appreciated the fund of skilled and artistic taste lying in most cases dormant in the Indian craftsman, to a great extent unspoiled even yet, but which is fast being lost or ruined, first, by his ignorance of changed conditions and taste and, second, by a system of education that has not taken into consideration the peculiarities of his requirements and the value of his traditional craft methods. As a consequence he has fallen into the mistake of copying bad specimens of western craft, this being the only available means he has seen of educating himself.

If the best native industries are to be preserved and encouraged, it is a process in which a little expenditure is useless, and very little of the public funds have been available for it up to the present time. Lavish expenditure in technical and commercial education is as necessary in India to-day as it was in Japan fifty years ago, and would I believe give as profitable results.

II.—Technical aid to industries.

I have no knowledge of any technical or scientific aid from Government that is within the reach of the industrial worker of this Province, agriculture not being included as an industry.

In my opinion Punjabi may be considered to be one of the most skilful, apt and industrious of all India's industrial workers when under direct supervision, yet it is an indisputable fact that most of the industries have failed to maintain their popularity and have in most cases steadily deteriorated in quality and quantity owing as I take it in a great measure to want of technical and commercial knowledge. I will mention a few only that have particularly suffered. Carpet-making, all kinds of dyed goods and printed cottons, woven goods, pottery and tiles, silver wares, and wood-work, especially of decorative quality.

I am aware that these industries have suffered in a great measure through the changes in industrial and commercial conditions, but there is no doubt in my mind that they would have suffered much less if there had been available any sort of technical and scientific assistance.

Dyeing industry.

One industry in particular would be likely to benefit greatly if there were a Government demonstration and research institute, and that is the dyeing industry. Vegetable dyes are no longer so beautiful nor so *pucca* as formerly and a great number of industries and art crafts are affected, notably those mentioned above. The Punjabi has either lost the traditional methods of preparing and using these colours or has through stress of commercial competition rushed the process and so has lost beauty of effect and permanency of colour. Research might surely assist the small producer in economy of labour and cheapness of production. As long as the traditional crafts of India are appreciated and it is desired to preserve them in their traditional forms so long will such aids to beauty as vegetable dyes be required. Experience shows that while science cheapens and perfects production in the commercial sense, beauty suffers from this very quality of scientific perfection. As an instance I may mention the loss of our power to reproduce the beauty of the Persian tile and the comparative crudeness of aniline dyes or again the deterioration in the colour of the Multan tile due to the unalloyed purity of the metallic oxides used which could not formerly be obtained in the bazar and had to be prepared by the workman himself.

One must realise that aniline dyes have come to stay for good or evil, but their uses are not understood, with the result that cheap fugitive colours are the most in vogue and probably even the best way to treat these is unknown or at any rate the worker does not trouble to carry out instructions issued with the dyes. I have it on the authority of Professor A. G. Green, F.R.S., late Professor of Tinctorial Chemistry, Leeds University, who is responsible for the discovery of many of these colours that properly prepared and used aniline dyes may be as permanent as vegetable dyes. That as used in India they are not permanent everybody has ample evidence. Any one who has compared the beauty and permanence of the old woven and embroidered goods with the later qualities must realise how much the workers have to learn of scientific dyeing. For instance, in woven materials look at Rampur *chaddars*, Kangra and Kashmir *pattoos* and tweeds or *lungis*, *pagris* or *kayes* from the Eastern Punjab, or in embroidered goods look at *phulkaris* or Chamba *rumals*. I think every one will agree that all these have been ruined by bad dyeing. mostly with aniline dyes.

Technotute.

For these reasons I am in favour of having a provincial research and demonstration institute for dyeing in the Punjab. Its aid must be within the easy reach of all workers, possibly on the lines of the Lyallpur Agricultural College. I am strongly in favour of spending the money available by bringing experts to this country rather than by sending Indians to England, my experience being that the Indian returning to India after a year or two in England is only partially trained and has lost all sympathy for Indian workers and only strives to transplant Western styles and methods here without any desire to help in the improvement or preservation of Indian crafts. A system of travelling scholarships in India, something on the line of those of the Manchester School of Technology by which a student is enabled to tour about and make researches into the failures and beauties of their work in other provinces, would do much more to conserve the industries and crafts of this country than any amount of foreign travel, if as I propose there was the expert and scientist at the immediate back of them. Unless it is desired to turn out Indian industries from one Western mould, I am not in favour of increased facilities for research or study in England except in the case of purely scientific work ; what we do want is to keep the individuality of Indian industries and to do this we want to encourage the study and appreciation of what is best in them which could be done best by Indian travelling scholarships. There are none so ignorant of what is good in their own country as the Indian students. When the expert staff of such a research institute as I suggest had been able to train Indian Professors, they should be allowed to give a liberal proportion of their time for the purpose of travelling and giving advice to private firms or smaller communities of workers. I think it will be admitted that you do not reach the Indian worker by taking students into a technical college ; you must devise some means of bringing your knowledge to his front door. In important industries it may be done from a centre by means of travelling experts or in the smaller industries by means of village demonstrators permanently employed to gather round them the artizans for instructional purposes. This could only be done by a Department of Industries having command of experts peculiar to the needs of the Province. The Director of Industries here has one such expert in his weaving department, but one man can hardly cover a Province like the Punjab. I do not not see any advantage in giving the Director of Industries the assistance of young civilians without any technical or scientific knowledge of industries for the purpose of interpreting to the worker the expert's advice and instructions, as was recently done in this Province in the case of certain defects in Multan tiles and pottery. The expert must come in direct contact with the worker if any good is to result.

Pottery.

Pottery and tile work of all kinds is another industry that urgently needs a central research institute not only to improve existing industries but to give assistance to commercial potteries. This is a trade that has a certain future in the Province : the raw materials are here or in adjacent provinces. A small works called the Eureka Tile Works, has already been started by two brothers ; formerly students of the Mayo School of Art, after studying in England, but they are handicapped by want of expert advice and capital. I have already proposed this craft as one of those needing initiation in the Mayo School of Art where it was formerly practised, but money has not been available up to the present and this is an industry that requires the latest and best scientific knowledge.

The peculiar circumstances by which metal has fulfilled most of the requirements of the Indian population are not likely to continue indefinitely, and I think one is justified in foreseeing a big future for the pottery industry in India.

III.—Assistance in marketing products.

Commercial museums.

I believe the original intention of having provincial museums was that they should influence and encourage industries. I know that this was the intention in founding the Central Museum, Lahore. As far as I know this aim no longer enters into policy of any

provincial museum and beyond the small influence that the sight of beautiful things may have upon the uneducated I am afraid that the exisiting museums have little or no educational or encouraging effect upon the class we wish to reach.

There used to be a small sale room (*vide* appendix A) attached to Lahore Museum, but it was closed before my time as it was considered to achieve no useful purpose, but in this case there was neither the money nor organisation to touch even the fringe of a very large problem.

I am in favour of commercial museums run on lines which would give proper prominence to both the commercial side and the craft side. It must have a head who could hold the balance fairly between the different communities and interests concerned, the man of taste and the man of business. It might well be under the controlling influence of the Department of Industries if such existed, but I am not in favour of its being run by a Government service man. I am not a business man and I do not know what are the requirements of organised business, but I know that the unorganised craftsmen badly need means by which they can not only find a market for their productions but obtain data that will give them an idea of what is in demand and the changes that are constantly occurring in that demand.

In my experience the Punjab cottage industries die simply because tastes change and the craftsman remains the same ; he has no knowledge by which he can adapt his traditional patterns to modern requirements ; as cost of production goes up, his work goes down in quality which is the only way he sees of meeting the exigencies of the case ; as he has no direct connection with the public he is forced to sell to the middle man and his profit is still further reduced. Such industries as Chiniot and Hoshiarpur wood work, Multan pottery and tiles work, and silversmith work are instances to hand. If commercial museums were formed and connected with local committees in the various craft centres whose duties would be to collect materials to give information in the course of their tours and if too there were a well considered and arranged publication by which up-to-date designs were placed before the craftsman, connected with and circulated by the museum [see my note (*vide* appendix B) on the *Journal of Indian Art and Industry* in reply to endorsement No. 1134, dated 22nd November 1916, from the Financial Department, Punjab Government), we should have the nucleus for a scheme of encouragement and conservation that I think would have far-reaching results.

Exhibitions.

Industrial exhibitions do not appear to have had any very great advantage. In the past they have been too few and far between ; before their value becomes known they are over. We want the constant dropping rather than a heavy downpour ; the Indian is too slow to change for an exhibition once in ten years to have any effect, but I do think that the idea of travelling exhibitions is a good one in order to bring direct to the worker the needs of the market. I have long felt the same want for the improvement of design and execution in the industrial schools under my control, and I have introduced a similar idea on a small scale by which I circulate to industrial schools through the Deputy Commissioner the spare products of the Mayo School of Art showing articles in wood and metal of improved design and construction, the object being by passing on from school to school to have a constant succession of different objects and so in the course of time to improve the Indian crafts work in these mediums. At present this has only begun and it is difficult for one institution to produce in the school course many objects in the year, but from the results obtained from one industrial school, *viz.*, the Amritsar School, it is evident, the advantage that is obtained from having a high standard to work to. I am convinced that some system of travelling exhibitions in which the work of the special industries of the locality were dealt with would have a beneficial effect, but I am not at all sure that short time exhibitions in small places would be either the most effective or the most economical methods of introducing new ideas, partly because of the difficulty of obtaining housing and partly because of the deterioration the exhibits would be bound to suffer under the travelling conditions of goods in India. On the whole, a system of periodical special exhibitions in the larger centres that might remain open even as long as six months seems to give the most likely chance of good results. I think Government should encourage such exhibitions and they might finance them to the extent of providing the specimens that are to form the exhibition, whether of foreign or Indian manufactures, but I am not in favour of Government paying for the exhibition. The Indian communities should be taught to help themselves and the surest way to ensure them acquiring knowledge is to make them pay for it ; therefore these exhibitions should be run by communal or private enterprise. Government policy should be in the direction of giving facilities for the acquisition of new plant or apparatus rather than by financing the workers. For instance, if as a result of an exhibition of pottery and tiles held in Multan, the potters wish to acquire the simple machinery used in the preparation of the various " spurs " used in firing modern pottery, specimens of which would naturally be part of the exhibition, and which are quite unknown in Multan ; then I think it should be possible to purchase

through Government the necessary machines on some such system as the hire-purchase, this being a case in which it is impossible to improve the industry without modern appliances and small workers could not obtain the same except by financial assistance. One small spur works could supply a whole district and the potters would speedily learn that instead of 70 per cent of their produce being scrapped or sold as "seconds" 70 per cent at least would be marketable with the help of spurs alone.

The exhibitions in most cases should not be popular in character, but should have the two-fold purpose of showing workers what the market demands and when convenient, how the result is produced, and purchasers what the workers produce, the primary object of what I may call those local exhibitions being the education of the worker into the laws of supply and demand and improvements in design or construction. It should be very helpful if lists of imported articles were circulated and some of them exhibited in commercial museums or local exhibitions.

IV.—Other forms of Government aid to industries.

Supply of raw materials by Government.

I have only experience of one raw product owned by Government and that is wood. I do not know if any measures are taken by the Forest Department to ensure a supply of seasoned wood, but early in my service I found it practically impossible to get wood of seasoned quality. Realising that it was impossible to do good work without good material I obtained Government sanction to purchase and store Rs. 10,000 worth of wood, but although this amount of wood was purchased, I received no assistance from the Forest Department in obtaining either good wood or reasonable rates; in every case I was told I could not be supplied. Only in the case of shisham wood did I buy from the Forest Department some logs in the open market at their own price, described as of first class quality, cut in 1912 and sold in 1913, an increase of 50 per cent being charged if any selection was made, only to find it of such coarse fibre and so green as to be useless for purposes of cabinet-making. Neither teak, deodar, nor any of the rarer woods have I been able to purchase through the Forest Department. Teak of all woods is the only one that has any pretensions to be seasoned, and I am told that the reason is that it is ringed and left standing for 10 years before cutting. Whether this is so or not, it is fairly well seasoned in bulk; but as wood cannot be properly seasoned until it is cut into planks or scantlings, it is not what it might be; it is also too expensive a wood for general purposes.

I think it is general knowledge that wood-work made and purchased in India soon warps and cracks and will not stand being exported home, and also that the quality of material apart altogether from workmanship does not compare with older work.

It is also general knowledge that a firm like Maple's or any other first class cabinet-maker stacks his wood and does not use it for 30 years after it is cut into suitable thicknesses. The lack of any such material here is bound to militate against both good work and its ready market. It is quite impossible for the ordinary producer to stock wood in any quantity sufficient for seasoning and one problem is how to meet his requirements, another is the requirements of Government departments. As far as I am aware the State railways are the only departments that can afford to stock any quantity: certainly contractors under the Public Works Department appear to have no facilities for obtaining good wood.

It appears to me that some action might well be expected of Government who owns such a raw product as wood to ensure that it reaches the consumer in a state fit for use. I realise the costliness of locking up capital for 30 years in central stock depôts, but if Government action is necessary to encourage and improve local industries, I see no alteranative than to start with improving the quality of raw material and facilities for getting it to consumers at reasonable rates, especially in the case of unbreakable raw materials such as wood, China clay and gypsum stone for the making of Plaster of Paris. A load of shisham wood logs, value Rs. 1,245, cost me Rs. 265 in freight and cartage from Changa Manga to Lahore, while a truck of 653 maunds of gypsum value Rs. 127-11-0 at Behra, costs Rs. 105 in freight to Lahore and Rs. 37 for loading and cartage.

V.—Training of labour and supervision.

It is possible that the lack of primary education has hindered industrial development, but I do not see that primary education as at present practised will do much to encourage industrial development, though a well considered system might do much. I mean by this a system that should bear in mind the possible finishing of the boy's education at the primary department so that it should be as much as possible complete in itself; not aiming at leading to future literary education, but aiming chiefly at training the boy's intelligence, power of observation, control and initiative, rather than giving him book knowledge, a smattering of subjects, or a little knowledge of English. Primary education could include with the three R's a compulsory training in Kindergarten work, drawing

and general manual training, all on educational lines so as to lead up to special schools for the training in craft work.

Proposals for industrial training.

My report (*vide* Appendix C) on the industrial schools of the province in the appendix to the 1914-15 Educational Report will give my opinion on the work the industrial schools had up to that time achieved.

Since then the question of industrial training has been considered by the Standing Committee on Industrial Education and my proposals to this Committee were roughly on the following lines :—

I.—That any attempt to teach craftsmanship in Primary Industrial schools should be abandoned, that they should no longer be recognised as industrial schools but as schools of manual training, and so be transferred to the control of the Inspector of Drawing and Manual Training of the province.

II.—That general education in Middle Industrial schools should be stopped at the V. Primary and the subjects taught in the Primary department be co-related to the craft work of the Middle department.

III.—That, in order to inculcate discipline and hard work, eight hours should be the working day of the Middle department, six of which should be devoted to craft work and two to drawing, mensuration and special subject related to craft work, such as English related to materials, tools and apparatus or a knowledge of the preparations of materials like wood, metal, etc.

IV.—That such schools should be under the control of craft-knowing heads, and under the inspection of an Industrial Inspector, not an educational Inspector as at present.

V.—That such Middle Industrial schools should be fed from Primary Manual training schools and in turn should feed advanced special schools as that proposed for Jullundur on the lines of the Bareilly School of Carpentry.

VI.—That it would be essential to equip all Industrial schools with up-to-date light power machinery and that the crafts taught should depend upon local demands and that where possible the students, should be apprenticed to local works or Municipal workshops.

As an experimental measure I was permitted to make a test at the Amritsar Industrial school rather more than a year ago, and although I anticipated that the stopping of general education at the V. Primary and the learning of English would greatly reduce the number of students. I also foresaw the prospect of better craft-training bringing back a class of student really anxious to improve his knowledge of practical work. This has proved true, while the increased working hours have shown increased quality and finish.

The experiment at Amritsar is by no means complete for two reasons, first modern machinery has not yet been introduced, and second the proper co-relation of general subjects to the crafts taught has not been commenced owing to lack of the right text-books but the results already obtained go to show that we are now on better lines though sadly handicapped for want of money. This much is at least evident—that the present eight hours working day gives better discipline—one of the first essentials for all industrial training and that if a boy takes the course now introduced he is at least anxious to improve and it does not lead him away from his calling as formerly might easily have been the case.

Combination of apprenticesbip with technical training.

I am strongly in favour of combining industrial school training with apprenticeship to works but it is not easy to arrange outside big cities. Something has been done on these lines at the Railway Technical School, Lahore, by apprenticing pupils part time to the Railway workshops and also in giving half time apprentices in shops half time in the Railway Technical School for purposes of giving them theoretic training, mathematics and English ; but in neither of these cases has it proved entirely satisfactory. In the first case the students of the schools do not receive more as part time apprentices than they would do if they had had no technical training, and so are not attracted to this form of obtaining knowledge ; and in the latter case there has not been enough co-operation between the two institutions, and it has not been found possible to judge of the degree of advantage the shop-students have gained.

Industrial schools.

A wide system of industrial schools for the province has not yet received Government consideration, apart from the Railway Technical School there is not a Government Industrial School in the Punjab. Personally I do not think this form of training will achieve success as long as it is left to local bodies who either have not the funds or else a

settled policy in the matter. The failure of these schools up to the present only shows the hopelessness of attempting industrial training on profit-making lines and without liberal expenditure and does not show that small industries cannot be improved and encouraged by a sound system of industrial schools. It is an interesting object lesson to compare the Railway Technical School with local board schools in other parts of the province. In the first you have a school liberally equipped and supported by Government money where the whole efforts and policy of the Managing Committee is to perfect the training of the boys and to give them a chance of future employment. No attempt is made to make it self-supporting but to train the sons of artizans in the use of modern machinery as an aid to construction and finish. That the school fills an important place is evidenced by its popularity there being at present 400 pupils on the rolls and also by the fact that it attracts the sons of artizans to a greater extent than other schools of this class.

Compared with this we have the various district board schools, starved of equipment and money in many cases, with under-paid staffs and ill-qualified teachers trying to satisfy the supposed demand for literary education and an undoubted demand for more craft knowledge, and achieving neither, because the literary education is in most cases unadapted to the requirements of the artizan and the craft that is taught could be learnt better in the boy's home if he is the son of an artizan—and if he is not, the time given to craft work is not sufficient even to discipline him to hard work far less to good work. Let me give an instance on the teaching of weaving in the Rohtak Industrial School. The district is noted for fine muslins. The only justification for teaching this craft in the industrial school would be that it could be shown that with improved looms and designs the work of the bazar weaver could be better or more cheaply done. What is done is to give an unqualified weaver Rs. 20 per mensem to teach weaving-work that the better class bazar weaver would be ashamed to turn out. The natural result is the failure of the industrial school to achieve any useful purpose.

I am in favour of a department of Industries taking the management of such schools, they would be in no sense educational concerns and should not be in my opinion under an educational, authority if there were a properly equipped department of Industries with experts rather than officials at its command. I do not see how the two departments could work in unison in controlling industrial schools.

IX.—Other forms of Government action and organisation.

Under this head I only wish to call attention to silver goods as one of those products that urgently require some system of compulsory Government certificate and severe penalties for the sale of misdescribed silverware. **Certificates of quality.**

It is well known that the acquisition of silver and gold ornaments is the method adopted by the Punjabi for saving money and that the cost of making such ornaments varies from one anna to 4 annas per tola weight of silver used. If therefore hard times come, money can be raised by sale of ornaments with but small deduction for workmanship, if the original metal was good. Very different however is the case if the metal is dishonestly alloyed which is unfortunately a greatly increasing practice now-a-days.

This practice works harmfully to the industry in two ways: first, it checks the saving of money by buying ornaments : second, it gives the middleman an unfair advantage over the honest worker by enabling him to undersell and so forcing him into the position of a daily labourer instead of being a master craftsman. I do not hesitate to say that some of the silverware sold has no more right to the description " silver " than brass has the right to be described as " copper." This is pushing out the Indian worker and putting all the custom into the hands of European firms and the profit on European silverware is from 50 per cent; to 70 per cent.

The master worker would gladly welcome any system of hall-marking and willingly pay the cost as with his small expenses it would enable him to compete on advantageous terms with the middleman shop-keeper who is naturally not at all anxious in his short-sightedness to have to guarantee his goods.

That the profits of English silverware are so high is evidence enough that people will willingly pay for a guarantee of standard silver, and I think that no one will contend that there is any beauty in the English designs to account for it, though there is in the greater finish.

Latifi in the " Industrial Punjab " tells us that up to 1890 there was a system of Municipal hall-marking of silver and gold tinsel in Lahore and in Delhi even later. He quite fairly contends that this system was the bulwark of the industry.

Another aspect of the case is that if hall-marking were insisted upon in India it would help in the employment of Indian workers for European firms who now import every

bit of their silverware from England instead of using the undoubted skill of the native worker.

If municipalities were willing to introduce the assaying and stamping of standard silver it might be left in their hands, with sufficient power of prosecution and penalty in cases of fraud or forgery of hall-marks ; but I should prefer to see imperial control and uniformity of policy. Existing Government institutions might be made centres for testing and marking in the case of precious metals, as for instance mints or Industrial Institutions, but I have no knowledge of how hall-marking is worked in Europe.

APPENDIX A.

The object of the sale room was to encourage the artizans and to help the European tourists in obtaining ready-made objects without any difficulty.

The sale room was started in 1887 with a capital of Rs. 1,500 taken from the profits of the Mayo School of Art, Government having sanctioned a monthly allowance of Rs. 25 per mensem to the Registrar. There were two branches of this department termed : (*i*) Government purchases, and (*ii*) commission sale :—

(*i*) Articles brought by artizans, dealers, and purchased by Government. These were sold after adding a Government profit of 10 per cent. and in some cases considerably more than this.

(*ii*) Articles of great value brought by artizans and kept by Government on commission sale. These were sold at the prices fixed by owners but a sum of Rs. 6-4-0 per cent. was deducted from the proceeds, on account of Government profit, before payment to the owner.

This arrangement worked well from 1887 to 1892 as will be seen from the annual profits shown below :—

1887.	1888.	1889.	1890.	1891.	1892.	
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
106	622	805	840	562	245	average Rs. 600 per annum.

In the year 1893 at the instance of the Accountant-General it was decided to pay the allowance to the Registrar out of the profits accrued from the Art sale room. As the capital of Rs. 1,500 was spent in purchasing articles and there was no other fund to pay the Registrar the whole proceeds went to provide his allowance and consequently any articles sold could not be replaced. This arrangement brought the concern to an insolvent condition as the capital of Rs. 1,500 and the profit of Rs. 1,000, *viz.*, Rs. 2,500 had been disbursed to the Registrar, and when the accounts were balanced in March, 1902, there was three months' pay (Rs. 75) still due to him and only Rs. 7 to the credit of the fund. The total loss during this arrangement is as follows :—

1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
17	300	24,	149	80	101	229	306	226	204

To stop this unsatisfactory condition, in the year 1904, the Government sanctioned a special grant of Rs. 2,500 for the reorganization of the sale room and put it under the charge of the Darogah who was allowed 10 per cent on profits (nearly 5 per month for this extra work.)

This arrangement worked well again as will be seen from the annual profits shown below :—

1904-05.	1905-06.	1906-07.	1907-08.	1908-09.
Rs.	Rs.	Rs.	Rs.	Rs,
17	93	92	128	54

In the year 1909 when the Lieutenant-Governor visited the Museum, it was proposed to abolish this department as the small profits did not justify the use of so much space which could be better utilized for the display of sculptures and other antique objects. The department was accordingly closed, articles on commission sale being returned to owners, after recovery of the advances made ; those purchased by Government being sold by public auction and the proceeds utilized in the improvement of Economic and Industrial sections of the Museum.

The statement of account at the time of closure was as follows :—

			Rs.				Rs.
Capital in 1887	..	..	1,500	Cash in Treasury	..	..	4,347
Capital in 1904	..	..	2,500	Recoverable advances		..	331
Liabilities	..	..	5,924	Stock in hand		..	2,269
Profits ..	..	..	2,303	Stock in hand on commission sale			4,833
				Damaged goods ..	..	..	445
	Total	..	12,227		Total	..	12,225

APPENDIX B.

With reference to the correspondence under consideration and to the Journal of Indian Arts and its avowed aim to promote Indian arts and industries I am inclined to think that, first the original proposals of which the Journal was only a part, for the promotion of industrial arts in India have been entirely lost sight of, and, secondly, that the Journal hardly makes any attempt to improve existing industrial arts which is certainly the first step necessary to their promotion. I consider that the Journal has become a connoisseur catalogue of Indian Industrial Arts as they were and in some cases as they have become in their decadence, but it gives no inkling of what they might be under the commercial and western influences which have to be recognised as here for ever.

Any one who has lived long in India must be aware that the conditions of supply and demand, the cost of labour and materials, the public taste owing to these conditions, and the influence of western taste have forced Indian arts into a channel foreign to its original course and leading only to cheapness and bad art. The idea that the Arts of India can be bolstered up and forced back into their original traditions against the powerful influence of modern conditions is to my mind a fallacy. The arts of a country grow from necessity, the most beautiful specimen of an industrial art must first be useful, and its essential beauty lies in its perfect utility, after that its beauty may be enhanced by decoration, the amount of which must depend upon its cost or commercial conditions. The tendency of all modern effort in the direction of encouraging Indian Arts has been towards trying to force good taste by reproducing and copying *ad infinitum* specimens of art for which there is no longer a demand in the true sense of the word, because such work has become too costly and the taste of the people has changed ; whereas all our efforts should be directed towards showing to the craftsman and the people how the beauty of form of Indian arts may be retained, modified or improved to suit modern requirements and taste.

In the Punjab for instance in Hoshiarpur, Chiniot or Jhang the craftsman is struggling to keep his craft alive by reproducing over and over again specimens of inlaid ivory, brass, or carved wood-work, long after either the demand for such work is dead or the cost of production has become prohibitive. He cannot reduce the cost of production by simplifying the design or by reducing the amount of decoration as he has not the knowledge ; his efforts all bear in the direction of trying to work quickly, and so bad work kills a craft that was already struggling against overwhelming odds to live.

Does the Journal of Indian Arts meet cases like this and half-a-dozen others in this Province ? I am quite aware that when I propose modernising Indian arts on the lines I have suggested that lovers of Indian art will cry out against such a proposal, but I say a live art is better than a dead tradition, and whether we like it or not the conditions of life are powerfully changing the art of the country and our duty must be to direct that change not to try and stop it.

What I advise therefore is that after the war the Journal of Indian Arts should enter upon its second series with the avowed object of being of practical utility to craftsmen and to all who are desirous of improving design and craft work in India, of whom there are hundreds, that it should become the mouthpiece of the Art School, that there should be five central committees in the five art schools centres presided over by the five principals, who should be made responsible that their schools provide working designs for Industrial crafts based upon traditional Indian arts, where possible, but suited to English and Indian modern requirements, these designs to be reproduced side by side with the object that has inspired the design. These five central committees should be the clearing houses for material received from sub-committees in craft centres whose aim should be to collect or photograph good workable designs or craft objects and, starting with the five main centres permanent, exhibitions should be founded exhibiting only those things that either show evidence of coming from a live craft, or things that show from their design and workmanship that they are likely to be in demand. The Journal, reproducing from time to time specimens of the finest India craft work, should devote most of its space to articles on craft work and technical subjects of use to craftsmen such as dyeing, weaving, pottery, and tile work, wood preservation and seasoning, metal alloying and metal spinning, bronzing and lacquering

on wood and metal and a hundred other subjects, of vital interest, and to the reproduction of photographs of actual objects of Indian Art with working scale drawings and giving cost of materials and production. In other words, it is essential to have an authoritative journal given up to the true promotion of Industrial Arts in India. It should be run at Government expense published in England where the subject matter for the articles and the contributions can be most readily obtained, it must be run by experts and not by departmental officers, and no expense should be spared in keeping India up-to-date on all matters of Industrial Arts and Crafts. It would help to bring the Indian Art Schools in touch with the whole of India and tend to check the tendency to make them manufacturing concerns and force them to be what they should be, *i.e.*, centres of art, craft, education and design.

I do not wish to belittle in any way the most excellent work done by the Journal of Indian Art which has always been most excellently compiled and edited, and has established a most valuable record of the Indian Art Industries of the past, but I do feel most strongly that it would be a mistake to attempt to continue on the same lines in the future, when there is a crying need for a journal giving practical help to the craftsman of India.

APPENDIX C.

Note on existing Industrial Schools.

There is one thing that must be carefully considered while we are criticising industrial schools and seeking to improve them, and that is that, no matter whether the students are the sons of artizans or not, the vast majority of them is anxious only to obtain some form of Government employment. Even the cleverest of the boys who obtain perhaps a scholarship to enable them to continue their studies in the Mayo School of Art and after three or four years there, having learnt to do the finest craft work which would fit them to open their own shops for the production of really first class work, they readily throw up the practice of their craft in favour of a post as teacher on Rs. 30 a month. It is true they may become good teachers, but if they use all their training for the purpose of training others to become teachers how are the industries of the province benefited. Unless a fair percentage of these industrial students use their training in the continued practice of their craft there is something defective in the scheme of things.

These boys come of a class that usually have no means of commanding money with which to start industrial enterprises. It appears, therefore, that no industrial training is complete unless a system is devised by which a boy can be helped to start his own works when he has completed his training.

Taking industrial schools as a whole the following are the points which strike the observer :—

(1) that a minority only of the pupils are of the artizan class ;

(2) that there is no clear idea of the principles on which the schools are to work. that is, whether on educational lines or with a view to training craftsmen ;

(3) that the buildings are unsuitable and the equipment insufficient ;

(4) that the crafts selected for teaching are often neither related to educational value or the craft demands of the district ;

(5) that although Government pay a grant-in-aid the governing bodies appear to have a free hand in appointing teachers, in starving the school of necessities or in trying to make sale-proceeds balance expenditure ;

(6) that whether considered as a craft school or an educational school, the teachers are often untrained for either purpose ;

(7) that the discipline is slack and the hours of work have no relation to the future life and labour conditions of the artizan ;

(8) that the general education given is both in advance of, and unsuited and unrelated to, the work the boys will have to do ;

(9) that the Headmasters of these schools in nearly every case are appointed by the District Inspector for the general qualifications and not for their craft knowledge so there is hardly a single Headmaster who is either qualified in or sympathetic with industrial training ; and

(10) that although these are industrial schools or at any rate schools whose aim it is to train the industrial classes, it is the District Inspector and not the Industrial Inspector who represents Government in their management.

It appears to me that there are only two types of industrial schools possible. One is a school in which the Industrial classes shall have an opportunity of obtaining such general education as shall fit them to be better and more intelligent workmen and in addition be trained in the use of modern tools and a systematic course of craft work in order to give them step by step a knowledge ranging from plain work up to the refinements of construction and finish of the best type of work.

In a school of this kind general education should end at the V. Primary, and up to this stage, the whole course, whether general education, drawing or craft work, should be purely educational, but with a distinct bearing upon the future requirements of the craftsman. In continuation of this preliminary training there should follow industrial training in which the discipline and hours of work should be in harmony with those obtaining in the bazar and workshop in which the boys should be taught something of the origin, nature and cost of the material he has to work with, a proper system of estimating value of materials and labour, and honesty and refinement of construction and finish.

The second possible type of industrial schools is that founded with the avowed object of giving boys of the Industrial classes an opportunity of raising themselves by education out of the sphere of life in which they are. This school, I imagine, would lead to the High School and University. In this school drawing and manual training should be used to the utmost and only for the purpose of increasing the boys' general intelligence, powers of observation, self-reliance, and initiative. Such a school cannot properly be called an Industrial School.

With these two types let us compare the existing industrial schools.

While wishing to train craftsmen they give in many cases general education far beyond a craftsman's needs, and there is little or no attempt to give this general education any bearing upon a craftsman's work. At the end of a boy's training after 8 years he has learnt to work perhaps 3 hours a day at his craft when a bazar mistri has to work 8, 10, or 12. The tools he has been working with are little or no better than bazar tools. Even if the teacher is qualified he has no time to teach the boys any superiority of work or finish as he is required by the governing board to produce finished salable articles. With all his general education the boy cannot estimate correctly the cost of such a simple thing as an almirah ; he knows nothing beyond the mere names of the materials he has to use. A boy in the Amritsar School, on being asked, said that steel was a mixture of cast iron and wrought iron, and that zinc was used by jewellers as an alloy in the making of silver ornaments, yet a boy from this school is appointed as a qualified carpentry teacher in Raja Sansi where manual training is taught for purposes of raising the boy's general intelligence. A boy in these schools. although he may spend 2 or 3 hours a day in manual work, is often required by the District Inspector to take drill as one of the many subjects he must learn. In the primary schools where the best teachers are required to give the manual training as educational basis, carpenters and blacksmiths are employed at a salary equal only to half what a good mistri can earn in the bazar. Tailoring or shoemaking are taught in some schools without any consideration as to either their educational value or the requirements of the district, for no other reason apparently than that the salary of the teacher is low and equipment little or nothing.

In Kalabagh, for instance, although iron work and weaving are the industries of the district, the industrial school teaches tailoring as an extra craft in addition to carpentry, not because the tailors want it as out of the 61 boys learning tailoring only 4 are tailors' sons, but because the boys like the easy work, and the parents say they can get a few pice as soon as their boys can run a hem or work a machine, then they leave the school.

As far as I can judge it appears that artizans do not send their sons to these schools, because they learn little in them that will be useful afterwards, and the craft they do learn could have been learnt better in the artizans' home, and by their school training they are undisciplined and ruined for hard work, those artizans, on the other hand, who do send their sons, do so not for the craft's sake, but in order to help their children by education to rise above the artizans' calling.

The result is this—by giving too much general education the divorce of the artizan's sons from his calling is assisted and by giving slovenly craft training and too much general education the artizan is made shy of sending his son, and the sons of non-artizans are encouraged to join and to aspire to become teachers of craft or drawing. Also the artizan feels that the proper industrial atmosphere is missing owing to the head not having the necessary training. It is most necessary that both by example and precept the boys should be led to consider craft work as one of the noblest callings.

In brief my recommendations are as follows :—

(1) That the only official adviser for these schools in industrial subjects and general management should be a properly qualified and appointed industrial inspector with an assistant inspector for general subjects.
(2) That no Head Master be appointed unless he is qualified in at least one craft besides drawing.
(3) That all teachers be required to hold a departmental certificate which may be acquired either in a training institution or by proved ability and under recommendation by the industrial inspector.
(4) That the Department should lay down definite principles governing industrial schools, and that no recognition or grants-in-aid be given unless the schools conform to these principles.
(5) That general education should cease at the V. Primary standard with a special course in arithmetic for mensuration and estimating later.
(6) That after passing the general education test all boys be required to work 8 hours a day not including recess.
(7) That a minimum equipment be enforced together with an adequate contingent grant both based upon the number of boys in the school.
(8) That a minimum scale of salaries be fixed.
(9) That all buildings must be passed as suitable by the Inspector.

ORAL EVIDENCE, 15TH DECEMBER 1917.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Your evidence is very clear on the subject of technical and industrial education, and I do not think personally I need ask many questions. There is one point I would like cleared up about your scheme of industrial education ; does that relate to the education of artisan boys only ?—*A.*—No, to the classes I have had personal experience with as an art craftsman, either artisan or non-artisan.

Q.—And their present prospect is or will be to get posts as teachers in industrial schools ?—*A.*—I have said in my written evidence that I do think that is their main object : in the majority of cases I consider that their object is to get into Government service.

Q.—That is their present object ?—*A.*—Yes, their present object.

Q.—But your object is to turn them into artisans ?—*A.*—Our object is, I take it, to bring them into direct contact with the classes they come from with their improved training.

Q.—You have mentioned in one place about financial help : you say that you don't get any help to start any industry, how do you propose to remedy that defect ?—*A.*—I think that an institution such as mine, which you might call the mother institution, and these industrial schools ought to have funds available for aiding boys who wish to work in a definite craft.

Q.—You would like to advance them money on loan ?—*A.*—I think money should be advanced for the purchase of hand tools, to be collected by the district officers afterwards.

Q.—But that can be managed better by the Director of Industries ?—*A.*—It might be if there were a properly financed department at his back ; but I think there should be some means of helping the boys whom I knew were not provided with enough means to start on their craft.

Q.—Therefore you think that when they get education and pass from your school they should also get some pecuniary help so that they can start an industry of their own ?—*A.*—Yes. I think it has been done, if I remember right, in a weaving school in Bengal. I have been told about a scheme by which the authorities were allowed to give as much as 100 rupees for the purchase of apparatus, and that it worked well.

Q.—You have no idea as to what the total amount will be, if you could start such a scheme ?—*A.*—No, I have not thought of it, because some boys might only require hand tools, but others might require machine tools.

Q.—From your long experience with these boys do you think there is much risk in advancing a few rupees ?—*A.*—I think it should be done under very careful supervision and enquiry. I think there might be great risk otherwise.

Q.—Even if there is a little risk, do you still think that it is desirable to make advances to prevent people who go out from your school from wasting their craft knowledge ?—*A.*—I do most decidedly ; I have thought very seriously over it ; it is very disheartening to see a competent, certainly highly qualified craftsman in some directions, in place of taking up that craft and going back to his district or village, preferring to take up a teachership in an industrial school on 20 or 30 rupees often, though he has the chance of earning much more in his own craft.

Q.—Do you think there is any possibility of raising a small fund from the public here who interest themselves in the development of industries and keeping this fund for that purpose.—*A.*—I do not think so. So far as I know I do not see any sign of such keen interest as would suggest such methods.

Q.—So you must rely on Government?—*A.*—I do not see how you can do otherwise.

Q.—You have enumerated here certain defects in the present primary education system; have you reported them to the proper authority?—*A.*—There is my report on the industrial schools which was sent to the Director of Public Instruction. As a matter of fact that was drawn up after I had made constant complaints of the condition of these schools, and the former Director of Public Instruction said, will you put up a note for the information of Government upon this point? and That note on education which was put up in 1914-15 was the result.

Q.—Have you heard of any action taken upon that report of yours?—*A.*—Yes, I think it also had some result; the Standing Committee on Industrial Education which was appointed by the Local Government took that report of mine as a basis, and many of the recommendations which they put to Government are based upon that criticism.

Q.—Has anything been done on those recommendations?—*A.*—Something has already been done because we have already adopted one or two of its suggestions, namely, that we want more discipline in labour, that craft boys must learn to work long hours, and so on; for that reason we started an 8 hours' day in Amritsar.

Q.—Then generally speaking the Education Department in the Punjab have accepted your scheme?—*A.*—I certainly think so.

Mr. C. E. Low.—*Q.*—Your staff does not admit of your keeping in touch with your ex-pupils in any way, I gather?—*A.*—No, my staff could not possibly undertake such a job, I think it should be undertaken, but I think one man would have to be deputed specially for it.

Q.—This proposal you make about giving boys enough money to purchase tools, that for instance could not be undertaken with any safety unless you had a special staff?—*A.*—I think we should have to have some means of making very close enquiries and some guarantee that the money would be returned. That I think might be done through district officers.

Q.—With the help of district officers?—*A.*—I mean in district like Lahore there might be a special staff of the school for that purpose who might also have some other duty, namely, the duty of keeping in touch with students who had already left the school.

Q.—Of course the trouble will be that if you are dealing through the ordinary district staff they will hold enquiries as to these men's solvency, and so on, so it may cost some money?—*A.*—Certainly, I realise that.

Q.—Then do you think that more could be done to help ex-pupils, get a market for their wares through a selling agency for instance?—*A.*—I think that is one of the most important needs of the whole concern.

Q.—Do they produce the best selling articles?—*A.*—They can only produce the best selling articles by having some means of obtaining information as to what is most in requirement; at the present time they have no means whatever.

Q.—You are aware of the arrangements made in Cawnpore and Madras and possibly in other places to bring articles made by Indian craftsman together where they can be dealt with?—*A.*—By means of an exhibition. I have been to Madras, and I went through that with Mr. Hadaway.

Q.—Have you seen such a thing in Cawnpore?—*A.*—I have not been there.

Q.—The connection between the selling agency there and the craftsman is probably more organic and direct, and they don't by any means confine themselves to artistic things, they sell quite ordinary things too?—*A.*—I do not think it would be necessary to confine it to merely artistic work.

Q.—For instance, we were informed by the manager of the Swadeshi Stores in Bombay that he found this Cawnpore agency a very handy thing to do business with. You think then that a small amount of staff would help you to fulfil all these objects?—*A.*—Well, those objects don't include one of the main objects, that is, to bring the work of an institution like mine into contact with the worker.

Q.—That is very largely a question of increasing the prestige of your school and methods in the eyes of the craftsman, and one way, almost the best way, of doing that is that you would sell his stuff if you find that he follows your advice?—*A.*—My own thought

was that the present effort that we have made to circulate things of good design and good workmanship into the districts would be a much better method than to have a big central exhibition. I must say if there is a district which justifies an industrial school I think it should also justify such an exhibition as would bring the craftsman into contact with the buyer.

Q.—But, is not the craftsman much more likely to follow your advice in any particular, if in another way you could show him how to earn more money? Is not that more likely to gain his confidence?—*A.*—Well, it is the difficulty of having a centre which is apart from a large number of small workers. I do not see in a country like the Punjab, where the workers are dispersed over large areas, how one central sales or commercial museum would fulfil anything like the objects that it aims at.

Q.—Well, it might fulfil this one object at any rate, namely, that it would be able to sell a lot of their goods. This does not preclude the existence of what you propose?—*A.*—No, it does not, but what I think is that you won't increase the sale of their goods unless they know what is really required, how the public taste is changed, and how commercial conditions force that change, and that I think can only be done by bringing your market for craft work into actual contact with the workers.

Q.—I do not know, unless the craftsman is materially different from the agriculturist; you have got to show them that any new method which you propose stands on some economic basis. They cannot take risks, and unless they can see their money coming back they are not going to enter into what is to them speculation?—*A.*—I quite see that.

Q.—If you can show a man that these things are certain sellers, then he will do it; it is not a very idealistic basis, but I think it is perhaps a practical one?—*A.*—I quite see that.

Q.—Have you ever put any proposals before the Government in the direction of fulfilling these objects?—*A.*—No, for the reason that I took control of this school only three years ago just before the war began; and since then it has been impossible to propose any expenditure, and therefore my closest experience of the whole work has been practically during the last three or four years.

Q.—Have these craftsmen got any system of co-operative work?—*A.*—I have never heard of any.

Q.—Are any efforts being made to induce them to take up such a line of work?—*A.*—Not that I know of, I have never heard of any.

Q.—You speak about the way in which the Indian dyers are turning towards aniline dyes: is it not the case generally that they prefer aniline dyes because the indigenous dyes take a long time to work and do not give very certain results on cotton at any rate when you have prepared them?—*A.*—I think that is probably the reason.

Q.—They like bright colours, their taste is in that direction?—*A.*—I think that is so. I think that is due to ignorance and decadence and it follows throughout craft work in India. It is a very natural tendency of the craft-worker to pick up anything new.

Q.—You don't think that their taste was always for bright colours?—*A.*—I think it was, but not for the cheap aniline type which is a very different type from the type of bright colours, which India produced herself long before aniline dyes were known.

Q.—You are using the word aniline not in its strict sense; you mean synthetic dyes?—*A.*—Yes.

Q.—You don't think that a proper use and combination of synthetic dyes could be made to give really desirable results?—*A.*—I have no technical knowledge of dyeing. I only know that synthetic dyes can be made perfectly permanent with a tremendously wide range of colours.

Q.—More permanent?—*A.*—Very often a good deal more permanent than the vegetable dyes. I know that from my own brother-in-law who is Professor of Chemistry in Leeds, but I have no knowledge of the working.

Q.—You give your idea about pottery works. Are you at all in touch with what has been done in Bombay in the way of research work in the School of Art there?—*A.*—I know they are doing the work there, I have seen before; they have developed their pottery school, I went through the school of pottery there; that was 6 years ago.

Q.—They are now doing practical research work, and they examined a large number of clays for different purposes; is not that also your idea?—*A.*—That is my idea.

Q.—Do you think there is scope for it in the Punjab?—*A.*—I am certain that with the help of some technical assistance of that kind, pottery such as the Multan pottery could be restored, not only restored to its original basis, but there is a possibility of eventually improving it.

Q.—You say that the peculiar circumstances by which metal has fulfilled most of the requirements of the Indian population are not likely to continue indefinitely, what do you mean?—*A.*—I mean to say that the prejudice against other materials is dying out.

Q.—But is there any prejudice against earthenware and glassware?—*A.*—I do not think there is, but the habit has been to use brass and copper.

Q.—But they have been using freely glazed earthenware plates and jars for the last 50 years to hold pickles and chutneys and so on in households, there is no prejudice against these?—*A.*—None at all, I do not mean to infer there is any prejudice against pottery.

Q.—You say "as he has no direct connection with the public he is forced to sell to the middleman and his profit is still further reduced;" one fault of the middleman in respect of special art wares is that he does not increase the range of selling?—*A.*—I do not think he helps the craftsmen in the least.

Q.—He goes in for the most crude forms of art ware?—*A.*—That is what I mean; far from helping the Indian craftsman he will take up the crudest of western forms of ornamentation, and lavish them in a most hideous way to the detriment of the whole art.

Q.—You are aware also that various commercial concerns have been opened in England during the last 8 or 10 years for the sale of Indian art wares and they have all been failures?—*A.*—I have heard that.

Q.—Do you know whether the articles sold in these shops in England represent the best Indian craft, the high range of Indian artistic wares?—*A.*—I do not think they represent in the least what India can do.

Q.—That is extraordinary?—*A.*—My impression is that they are goods made specially for the market and not goods made as part of the crafts of the people, which is quite a different thing. There are certain articles specially made for the European market such as Benares brassware, they are not Benares in the true sense of the word at all.

Q.—You are perhaps aware that there are very much better prospects in the United States for the sale of a good glass of Indian art wares?—*A.*—Yes, I know that many cotton printers have supplied cotton prints. There is a shop here in the bazaar, the man supplies cotton prints more to America than to any other country.

Q.—You can get lists of American dealers from the Commercial Intelligence Branch of the British Board of Trade?—*A.*—I don't know that.

Q.—And their Trade Commissioners will help you in the matter. Have you ever considered the idea of trying to get more foreign markets for this kind of things?—*A.*—Well, I have considered it, but it is a practical impossibility.

Q.—Is it a question of finance?—*A.*—I mean to say that the whole time at the disposal of myself and my staff is absolutely full up with practical work.

Q.—As far as you are concerned, it is merely a question of more staff?—*A.*—Not entirely! I do not think that business arrangements can come within the province of the work of a School of Art. A business man is wanted. I could not possibly touch that and carry on a School of Arts such as a I have got.

Q.—You want a man very much less highly trained than yourself with more ordinary qualifications who could do this kind of thing? Do you think there is a good field for taking up a vocation of this kind?—*A.*—I think so, but it ought to be a separate department, I do not think it is a job that you can expect my institution to take up.

Q.—What sort of officer do you consider is required for the inspection of industrial schools?—*A.*—That is rather a difficult question to answer. He must be sympathetic with Indian crafts, he must be an educationalist, I should say he must have studied the value of manual work as an education, he should also have a knowledge of modern requirements in craft work as against the present work of the different crafts.

Q.—Would you say that the man with the necessary qualifications is to be evolved or recruited?—*A.*—I do not think he could be recruited. I think that you could recruit a man and he could train himself afterwards. I do not think you could recruit a man with the necessary qualifications.

Q.—Do you consider that a man who would be satisfactory from the point of view of the craft schools will also be able to inspect both craft schools and ordinary industrial schools: don't you think it would be more satisfactory if you had separate inspectors?—*A.*—I do not quite follow what you mean by the word "craft schools."

Q.—Teaching ordinary bazar work which depends very largely for its sale on its beauty and artistic merit, whereas the other class of school would attempt to teach boys to qualify for organised industries or to turn them out as artisans to make articles of purely simple utility?—*A.*—I think that an industrial school should not attempt to be an art craft school.

Q.—Don't you think the result of the attempt to mix up the two will lead to the gradual neglect of the artistic side ?—*A.*—I certainly think so, but the Arts Schools of India if properly equipped and financed can look after the art crafts.

Q.—Putting aside for the moment the question of art crafts, what sort of man do you think you want to inspect industrial schools pure and simple ?—*A.*—I think for purely industrial schools you want a well educated man with a knowledge of industries and knowledge of craft work, that is all.

Q.—Do you think it necessary he should be an educational specialist ?—*A.*—I do not think so.

Q.—An industrial man with an instinct for educational methods ?—*A.*—I think the instinct of educational methods will be called out with the instinct of industry. I do not think there is any difference.

Q.—Do you think an educationalist pure and simple could pick up industrial methods and ideas ?—*A.*—I do not think he will. I think you will want a well educated craftsman. He should be attached to a parent institution such as the School of Art in the Punjab until he has learnt his work.

Q.—How do you propose to get over his comparative disability as regards educational methods so-called ? You consider that purely educational methods are vicious from the industrial point of view ?—*A.*—I think that the educational methods ordinarily recognised in India are vicious. I mean to say by that that I think that a man who inspects industrial schools should primarily be imbued with the value of industrial schools as a means of training, not with any definite idea of making all craftsmen educated.

Q.—You don't want to improve educational methods in the industrial schools ?—*A.*—I think that is provided for ; the boy should be well educated in crafts ; in other words, provided you start from the bottom and work up in progressive stages with the definite aim of training that boy to be careful with his hands, observant with his eyes and honest in his labour, you cannot expect more from an industrial school. This prepares him for the road you want him to go.

Hon'ble Pandit M. M. Malaviya.—*Q.*—You are an Inspector of industrial schools in this province : will you kindly tell us how many industrial schools there are in the province ?—*A.*—There are about 30 industrial schools, they grew from about 10 five years ago up to 30 now, but 23 of these are primary schools ; they were called industrial schools and have been industrial schools merely because they practice certain manual training, that is all, but in no sense are they industrial schools.

Q.—23 of these are primary, and you have 7 schools which you might put down really as industrial schools ? *A.*—Yes.

Q.—What industrial training do they impart in these 7 ?—*A.*—Mostly we have woodwork and metal-work only, but in certain districts they have weaving, in one other a small amount of pottery.

Q.—You say in one place in your note that there is no Government industrial school in the Punjab, except the Railway Technical School, then what are these schools, are they under district boards ?—*A.*—They are State-aided schools, by which I mean (I believe I am right) about 2-3rds of the total expenditure on salaries can be given in aid by the Government to district boards running industrial schools.

Q.—You say you recommend that such schools should be established all over the province. I suppose you mean there should be a school in every district ?—*A.*—I mean every industrial district, I do not mean all over the province.

Q.—Any district where there are industries ?—*A.*—Yes, there should be industrial schools.

Q.—Is it your experience that men who do not belong to the particular castes which are carrying on these trades or industries are also taking kindly to industrial education ?—*A.*—That is my experience. A good many do take very kindly to it.

Q.—Don't you think that even where industries do not largely exist at present, industrial schools might develop a taste for industries ?—*A.*—That is really what I mean. I do not attach importance to industrial schools only because they are in industrial centres, but because I believe that industrial training is required by everybody more or less.

Q.—Would you have industrial training imparted along with general education ?—*A.*—That is my point. In the form of manual training.

Q.—You say that primary education is not at present what it should be and that a well-considered system of primary education might do much to encourage industrial development. Under heading 5, you say that "primary education should include with the 3 R's, compulsory training in Kindergarten work, drawing and general

manual training, all on educational lines, so as to lead up to special schools for the training in craft work." Is that the kind of industrial schools which you would have, that is to say, general schools with an industrial turn given to the education imparted in them?—*A*—No, that is not what we have now.

Q.—That is what you would have?—*A.*—That is what I would have.

Q.—You suggest that general education for industrial schools should be stopped at the V Primary, I supppose you mean the 5th class?—*A.*—What is called the 5th upper primary is the 5th class.

Q.—In another place you say "I mean by this a system which should bear in mind the possible finishing of the boy's education at the primary department so that it should be as much as possible complete in itself;" do you think that if you stopped the general education of the boy at the 5th primary it would be satisfactory?—*A.*—For ordinary craftsmen, yes, I think so, provided always that the general education was related in some definite manner to any craft work that he might possibly have to do. I mean to say his education should be so self-contained or so unconnected with any definite future trade that he could go on with any craft if he did not want to go to a high school. I mean that the general subjects of education in the primary should be co-related to craft work, he should have some knowledge imparted which would inspire interest in craft work, which would help the boy from the very beginning to see that craft work is creative work and is one of the highest professions, not one of the menial professions.

Q.—Useful and artistic?—*A.*—I want to see a system of education that will give the boy, first interest and then carry on to enthusiasm in craft work, whether he is going to be a craftsman or not; that is my point.

Q.—You know the standard that obtains in England in the elementary schools?—*A.*—Yes.

Q.—Don't you think that we should aim at that? Of course it will take a long time to attain it, but don't you think that we should aim at that here?—*A.*—You mean manual training?

Q.—Compulsory elementary education such as you have in England, that foundation which leaves a boy with a general aptitude for pulling on with anything he may put his hand to?—*A.*—Roughly that is the idea.

Q.—You mention here the desirability of having a provincial research and demonstration institute for dyeing in the Punjab and you also mention the desirability of developing pottery and tile work; I take it that you mean that there should be one technical institute where these different branches of industrial research should be uudertaken?—*A.*—That is my idea. I think on the lines of the Manchester School of Technology.

Q.—On the lines of the Manchester School of Technology? *A.*—I mean to say that different provinces should have a technical institute which would deal particularly with the wants of that province, not necessarily only with the industries that already exist but also with those that may be developed.

Q.—For instance you will have chemical industries apart from those denoted by tinctorial chemistry which you have suggested; there may be other chemical industries which might be taught there?—*A.*—Of course I have not touched that, because I do not know anything of the scientific industries.

Q.—You say here that if Indian industries are to be preserved and encouraged, a great deal of expenditure would be necessary, and you say "lavish expenditure in technical and commercial education is as necessary in India to-day as it was in Japan 50 years ago." I quite agree with that, would you tell us something of the system of technical and commercial education that you have in view?—*A.*—I could not do that offhand.

Q.—In connection with industrial schools?—*A.*—In connection with industrial schools I can only refer to the reports that I read on Japan and on Wurtemburg before I came out here; I merely quote from memory; unless I get the reports here I could not give you any details.

Q.—I take it you apprehend no other difficulty except the difficulty of finding the necessary funds, because funds will find the man and the equipment?—*A.*—I think so; it generally follows that if you are prepared to pay you will get the men you want.

Q.—Do you also think from a knowledge of the boys who have been coming to you that if there was a system of technical and commercial education introduced then many of the students would take to these courses?—*A.*—Commercial and technical education as against the ordinary literary education? I think there would be a large number who would take up such training because I should say it leads to some definite aim, some definite result, and one of the reasons why I think that industrial education is needed so much is, we want to encourage the boy who is being educated to form early a definite idea as to what his future is to be, and I

think the tendency of industrial education is to encourage the boy to form such an idea, whereas college education very often does not, until his college career is over.

Q.—Do you also think from what experience you have had here that the boy who has received some industrial education is more likely to find a living now than the boy who receives a merely literary education ?—*A.* - In the lower branches you mean, yes certainly, I know many of my boys, many boys from industrial schools, leave before their course simply because they can earn a small wage.

Mr. C. E. Low.— *Q.*—Supposing that the industrial education is of the type which as far as it has gone is only more or less a foundation for something else, that would not help him ?—*A.*—You mean industrial education such as I propose, no, I do not think that would help him much. I was speaking more especially of the present condition of industrial training.

Hon'ble Pandit M. M. Malaviya.— *Q.*—Suppose we get a standard fixed after consideration, I take it that that standard will be such that any student who has gone through it will be competent to take up work as a workman or an artisun ?—*A.*—After going through the school ?

Q.—Yes, such as you propose ?—*A.*—No, I do not think so. I look upon an industrial school very much as I should look upon a high school.

Q.—Won't he be qualified to be a workman or an artisan ?—*A.*—I do not think his training will be complete.

Q.—Wouldn't you say that the training should be complete so far as the workman or artisan is concerned ?—*A.*— I think his training may be complete, I think his training should be complete, in other words, you may train him to know and to be able to work, but I do not think that without further experience or training in commercial conditions he will be fitted ; he is not disciplined.

Q.—I see the distinction you draw as between a workman or artisan and a manager or supervisor of works. Would a student who passed through an industrial school be qualified to take up work as a workman or artisan ? I am not asking whether he will be qualified as manager or supervisor.—*A.*—I realise what you want. I do not think his training is complete, I do not think it is possible to make it so. My experience goes to show that a boy who has gone through an industrial school, however competently he may be able to work, unless he gets some training in discipline in a commercial work, such as an industry, is not really fitted to carry on as a finished man in his craft, not at least of any high order.

Q.—Let us take a concrete case : let us take dyeing or weaving : suppose you take dyeing, you train your student, you will have a workshop attached to your school where he will have some practice ; suppose he has gone through the theory and has gone also through a little practical dyeing through such course as you prescribe, don't you think that he will be good enough to go and take up work in a factory where dyeing is carried on ? Don't you think he will do much better than one who has not received such training ?—*A.*—I am perfectly certain he will do better, but the difficulty I find in the industrial training in schools is that they are not working under commercial conditions, and you cannot get 8 hours' work out of an 8 hours' day. I say so because I have seen boys in the canal workshops and in the railway workshops here. The work, discipline and labour of boys in industrial schools should be equal, but instead their work is in advance of their keenness for it, and the consequence is that they cannot keep up, they do about half of what a trained workman will do, if he is trained in a commercial workshop.

Q.—It has been suggested to us that if small industries are attached to industrial schools, then the boys will get the necessary amount of work in the shop and would be better prepared to join these commercial undertakings ?—*A.*—In connection with my plan I have often wished it, because we can do the work in the school, but if I were asked to make it a commercial success we should fail in the attempt because we do not get through the amount of work necessary, in fact there is no organisation to make it a really commercial concern ; in other words, such and such a man should produce so much per day, such and such workman must print so much, we cannot do that in the industrial school.

Q.—So if you had a workshop attached to the schools that you propose, you think that deficiency would be largely made good ?—*A.*—It might be worked if that could be done without undue competition against bazar workers. Suppose you had an industrial school to train men and then had a separate compartment where orders could be taken and the men were drafted from the training school into the commercial work shop it might be a very great advantage gained, that is, they should be forced as part of their course to qualify through actual commercial work.

Q.—Now let us take a case where it is not possible, where even a workshop is wanting, don't you think even so a student who has had his training in the industrial school will be likely to prove a better workman or artisan, comparatively speaking, than the man who has had no such training ?—*A.*—Certainly, I think so.

Q.—So that even if this ideal condition is not at once established, it would be an advantage to industry if these industrial schools were established and the boys were encouraged to train themselves there ?—*A.*—I have not the slightest doubt about that in my mind.

Q.—You mention in your note that the Punjabi is one of the most skilful, apt and industrious of all India's workers, that is no doubt true.—*A.*—When under direct supervision.

Q.—Is it your experience so far as you have seen of the Punjab that the finest work of the Punjabi has been done by the Punjabi worker or artisan without any supervision ? Surely in the case of all refined work, don't they work it in their homes, in their villages ?—*A.*—My remark here was not intended to mean that they don't do work unless they are under supervision: all I meant to say was, so far as my experience goes, they are good workmen under supervision, and also I might have added when they are working for themselves; they are one of the hardest working people if they have got a definite object in view; for instance, in the Lakkar bazar in Simla you notice the amount of work they do, they would work all night, they are working hard to make money; but if you employ a man by wages that is a different matter.

Q.—That is exactly my point. My point is this, if you take these workers and get work out of them under conditions which will be agreeable to them, congenial to them, they will do good work; if you arrange a cottage industry and distribute your help so that they may work in their homes, they are likely to do more work and better work than if they are working under factory conditions; that is exactly my point ?—*A.*—I think so too. I don't think that the Punjabi is the man that will work under factory conditions nearly as readily as in his own home.

Q.—You say "it is an indisputable fact that most of the industries have failed to maintain their popularity and have in most cases steadily deteriorated in quality owing as I take it in a great measure to want of technical and commercial knowledge." Will you kindly explain what you mean ?—*A.*—I mean they have marked time where commercial conditions should have really forced them to change their methods, not only commercial conditions but modern tastes.

Q.—Do you refer to conditions arising from the additional cost of the articles they produce ? Do you mean competition from outside ?—*A.*—I do not only mean that, I mean of course that commercial conditions, for instance, have prevented the Indian Cotton Printers from maintaining any demand for their goods because commercial conditions have planted on them cheap machine work. Now they have not, through lack of technical and commercial knowledge, adapted themselves to the change which means of course change of design and change of ideal both from the commercial and from the artistic point of view.

Q.—For instance you have seen the imitation shawls from Germany; they have killed the trade of the Punjab to a large extent ?—*A.*—Yes, that is my point.

Q.—Such an industry will depend upon the amount of technical knowledge and information available ?—*A.*—And I may add, of artistic skill too.

Q.—You speak here of the Eureka Tile works, where are they ?—*A.*—I think it is on the railway road just near the railway here.

Q.—Are they flourishing ?—*A.*—When I saw them they were doing very good work, but they had no capital; but I think I am right in saying that they could make a profit of 20 per cent. if they get up-to-date plant. Both the brothers, I think, certainly one, were students of the Mayo School of Art, they went to Staffordshire, studied pottery there and came back, they raised I think 20,000 rupees and put up their plant, they are doing quite good work.

Q.—You have advocated commercial museums run on the lines you have indicated, and you have also advocated permanent exhibitions which will last about six months; don't you think the two objects could be combined in a museum, I mean a permanent commercial museum ?—*A.*—I think my idea was that there should be local exhibitions, there might be one central sales museum, a commercial museum, but there should be some means of bringing the information about these museums into direct contact with the worker, and these should be periodical museums lasting a considerable time.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You say in your opening sentence that you have had experience as a craftsman at home: have you had any training ?—*A.*—I come from a craftsman family, and I was trained from a very young age.

Q.—From what age ?—*A.*—Probably about 7 or 8.

Q.—Have you had any industrial school training ?—*A.*—I had no industrial school training, my father was an engineer before he was an artist, and I worked in his workshop; then later in life I did practical work in a big firm of carvers and sculptors.

Q.—Had you been on the Continent anywhere?—*A.*—No, I have been in America but not on the Continent except as visitor.

Q.—At what age are boys taken in industrial schools in England?—*A.*—Well, in industrial schools in England I think not younger than about 12 or 14.

Q.—With reference to technical aid to industries, you say "but there is no doubt in my mind that they would have suffered much less if there had been available any sort of technical and scientific assistance": what sort of technical and scientific assistance do you refer to there?—*A.*—With reference particularly to dyeing, printed goods, cotton weaving, etc.; for instance, take pottery, the Multan potteries, I think that their work would have been more improved if they had had technical information as to why it was suffering from certain defects.

Q.—You say "if there were a Government demonstration and research institute for the dyeing industry"; you want an Imperial Institute, is it not?—*A.*—I think that the research section should be part of the technical institute which I think the province should have.

Q.—Have you seen the Government weaving school here?—*A.*—Yes.

Q.—And the dye works? Do they use vegetable dyes?—*A.*—I have seen them, they have just begun research work in that direction.

Q.—Then you say, "I am strongly in favour of spending the money available by bringing experts to this country rather than by sending Indians to England, my experience being that the Indian returning to India after a year or two in England is only partially trained." Do you refer to the students sent by Government or do you refer to private students? Of which have you got experience?—*A.*—I have had experience of some of these students trained in England, and the training they have had.

Q.—Have you any experience of students who have gone from your college?—*A.*—One student of my college has gone and he is now a teacher in the college—Munshi F. Din. He had training for 3 years, his training was good, but did not go far enough; that was what I meant. I could name other instances, but he is the only student of my school who went, but he went at his own expense, that was not a scholarship.

Q.—If he had studied two years more he would have been all right?—*A.*—I think he would admit that himself, that the training was not sufficient. May I say with reference to that that I had particularly in mind the cottage industries in the province which might suffer from having western designs and lose touch with all their traditional work.

Q.—Do you think you could revive the cottage industries in a province like the Punjab where there is a lot of agriculture and after the harvest is over they have got a lot of time which they waste? Do you think that training in the vernacular would be much better than in English?—*A.*—I do not want any English so far as craftsman work goes except for giving them the English technical terms for tools and apparatus; that would be simpler; my idea was to stop general education at the 5th primary, because I don't require further education for them.

Q.—But even after training only in the 3 R's, if these young boys in villages are given industrial training, I think they can go on very well without going up to the 5th standard?—*A.*—You think the 5th standard is not necessary?

Q.—For people in the villages.—*A.*—Well, I don't object to taking boys who have not gone even up to the 5th primary if they are good workmen.

Q.—I mean if you want to develop cottage industries?—*A.*—I don't think it is necessary. I didn't mean to infer that the 5th Primary is essential to every cottage industry.

Q.—Are there any vernacular text-books for this sort of teaching, technical text-books?—*A.*—None.

Q.—Do you think that is a question that ought also to be taken up?—*A.*—I said that in my report on industrial schools: that there was no connection between the subjects on the general side with the subjects on the manual training side.

Q.—Then about industrial exhibitions, don't you think that if there are big exhibitions just like the Allahabad exhibition, the practical craftsman and the other people can go and see and can find out what marketing value they have for their goods. I mean will not such an exhibition be a form of advertisement?—*A.*—I do think so, but I think they are too few and far between to have any great influence.

Q.—The big exhibitions cost a lot of money, the Allahabad one cost lakhs, so they cannot be held every year?—*A.*—I would sooner see provincial exhibitions.

Q.—In every province ? But suppose a man from Bombay or Bengal wanted to sell outside his own province, specially certain goods ?—*A.*—I think perhaps I was not clear in my statement. I had no objection whatever to large exhibitions, we all know their enormous value of what they have done to trade. What I really meant was that with reference to small industries a big exhibition would not have the same effect as a number of small exhibitions.

Q.—They won't be of any very great advantage ?—*A.*—I was speaking all the time from the cottage industry point of view.

Q.—Don't you think that such cottage industry exhibitions should be run by private enterprise ?—*A.*—I think so.

Q.—Do you think that is possible at the present stage ?—*A.*—Not possible immediately, but I think that Government should give them support ; I think that if they supply the means of collecting exhibits then municipal and district boards would see that the exhibits were well shown.

Q.—Then about your complaint about wood : do you think the present wood for carving is not all right because it cracks ?—*A.*—I was not referring only to carving. I was thinking of construction work in wood ; it is practically impossible to get any seasoned wood.

Q.—You have got to keep it a long time to make it fit ?—*A.*—Yes, a firm like Maples keep wood like 30 years before they make furniture. There is no means of keeping wood for such a long period in this country. There is no organisation for seeing that the wood arrives at the store in any state fit to be used.

Q.—Have you got any connection with the Railway School here ?—*A.*—I am on the managing committee and also on the school committee ; I am on both committees. I am also the industrial inspector.

Q.—What are the prospects of a boy who goes out of that school ?—*A.*—He has prospects if he stays in the railway or goes to any works ; or he may continue his study by going to the Mayo School of Arts if he wants to improve his craft knowledge.

Q.—But has he got any opening when he goes out ?—*A.* He has a good opening in the Railway Workshops if he will accept the pay.

Q.—They take him if he accepts the pay ?—*A.*—Yes, but there had been complaints about the pay ; those who were called literate apprentices, that is, boys going from that school after 8 years, they only got 5 annas a day as apprentices, and they felt that that was not enough pay to invite them to come, and the railway are considering the point ; they are proposing to start their pay at 12 annas a day and reduce their apprenticeship from 5 to 3 years.

Q.—But the name Railway Technical School is a misnomer ?—*A.*—The railway is represented on its managing committee and on the staff.

Q.—Are the railway paying anything to the funds ?—*A.*—No.

Q.—But the railway have also a school, is that only for Eurasians and Anglo-Indians ?—*A.*—Yes, not for Indians.

Q.—And these boys are being taken up by them, they are bound to them, and they pay them well ?—*A.*—I believe that is so ; there is no agreement.

Q.—Do you think that that school supplies all the needs of the railway ?—*A.*—I have not thought about that matter.

Q.—Do you think that this school should be taken over by the Government or the railway should take it over ?—*A.*—This is a Government school. This industrial school is an absolute success as far as we can judge ; the students get employment everywhere ; if they don't, they can go to the railway, but very few do, which shows that they obtain employment.

Q.—They are taken on what, 6 annas per day ?—*A.*—They used to be taken as literate apprentices, they began with 5 annas per day up to, I think, Re. 1 per day for 5 years' apprenticeship.

Q.—In the Railway Workshop School do they commence after 3 years ?—*A.*—That I do not know.

Q.—Then about silver goods, do you think that there is a demand in Europe for Indian silver goods ? Are they selling these silver goods in Europe or are they not because the finish is not so good ?—*A.* I do not think it has anything to do with the finish, taking the Benares goods the finish is quite as good ; but it is simply a question of increased use of alloys.

Q.—Then about sale agency, you agree about Indian Art Stores at home, you said so in reply to Mr. Low?—*A.*—Yes, it seems excellent; the only thing that strikes me is that it does not stand much chance of succeeding after the war; there is no guarantee that it would continue in its prosperous condition.

Q.—Then you think the professors from these industrial schools should visit the villages and demonstrate things there to the people?—*A.*—That is one of the ways in which you can improve industries. I am always seeking some way by which improved methods of conducting industries can be brought to the actual worker.

Q.—Is the old art painting reviving here?—*A.*—Not at all I should say. I do not see any sign of it; the only sign of that sort of work being done is the making of copies of very old paintings because there is an enormous sale for these paintings and a certain craftsman has realised it and is copying them *ad infinitum*. But there is no revival at all.

Sir D. J. Tata.—*Q.*—You say, speaking of students turned out from the industrial schools,—"This is not all to the bad; they hand on the training they have received, but it is generally in a very diluted form. I would rather see the craft student return to his home in larger numbers." Well, if he returns to his home and has improved methods of work, that makes his work a little dearer. Now where is the market in his home for his improved work?—*A.*—No, I am afraid at present there is none.

Q.—Cheapness is essentially everything in this country, and if he improved his methods until his work would be dearer after he went back to his native village, this improved work would make it out of reach of his customers, and he would not find a sale in his own home?—*A.*—I do not think it absolutely follows that because his work is improved therefore it is dearer. I mean by improved work very often simplification of design or construction, which he does not understand at present.

Q.—On which he would spend less time, and less labour, consequently?—*A.*—Yes, exactly. You may take for example, the Hoshiarpur work, inlaid ivory and wood work; enormous time is spent in that work which is quite out of harmony with modern taste at the present time. That time might be spent on doing better work and you can leave out half the design in order to simplify the work and to improve the finish.

Q.—How is he to make the design more simple and get the same effect?—*A.*—You can get similar effects more in harmony with public taste, and spend the time which would be put on this surface work on better construction, and that applies, I think, to a number of cottage industries.

Q.—Would he get the same price if the ivory inlaying was less?—*A.*—I think he might; in fact, he would get a higher price because it would be so much more in harmony with public taste, I mean the taste of his purchasers.

Q.—But are there any local purchasers?—*A.*—I do not think he has much demand locally.

Q.—In this connection we had a witness before us a few days ago who told us that the Indian artisan was dishonest in his work, that all he aimed at was to make money as quickly as possible, and that he scamped his work out of pure dishonesty and when asked to modify it, he held to that view. But is not the bad work or scamping due only to want of knowledge or skill?—*A.*—I think it is due to his want of education. I am inclined to think that your witness was not far wrong in his view.

Q.—For instance, if he picks up a piece of wood and finds it defective he will use putty, and go on rather than trouble to find a piece more suitable. Now, do you think that he does this simply through intentional dishonesty, or because he knows no better?—*A.*—I think it is due to lack of discipline of his mind, that is all. I do not think he does so out of intentional dishonesty, but partly out of ignorance which really means that he was not educated to think better, and partly indolence, that is, he does not take the trouble. The result is of course that we are bound to say he is dishonest because he supplies dishonest work.

Q.—Only if he supplies inferior wood?—*A.*—Of course then there is an element of dishonesty about it from the craftsman's point of view.

Q.—But he does not know. As long as the chair suits the purpose, being suitable to sit upon, he thinks he has given you all that is needed?—*A.*—He shows a serious want of industrial training.

Q.—That is the point. I could not get the other witness to admit that. I do not quite understand what you say about the system of travelling scholarships. How would you apply that in India? I do not quite follow your reasoning there; can you make it clearer?—*A.*—I believe the Manchester School of Technology has a system of travelling scholarships. In that case it is a case of travelling outside England. Instead of travelling outside I should have travelling inside in a large country like India. For instance, the

Manchester School of Technology sent a man with a travelling scholarship for 9 months and he was coming to India to acquire cotton-prints with a view to seeing whether the Manchester power printers could not make some of the Indian prints on their machinery. That is a purely commercial effort on their part to compete with Indian cotton-prints. I mean that in India a man might travel from one province to another with a scholarship and learn all that is to be learned in his trade.

Q.—Would you apply this to cottage and artistic industries and hand industries?—*A.*—To all industries into which art enters.

Q.—Now, you told us that art is deteriorating here, and there is a slavish copying of the old things which are not suited to the present demand, and you say that the student is unable to tour about to make researches into the failures and beauties of work in other provinces. Are there any beauties left to follow?—*A.*—I do not mean to say there are no beauties in India. They are found, I believe, in India in all forms of comparatively commonplace objects, but they have not any innate knowledge of it.

Q.—You mean the workmanship is beautiful, but it is not suitable to our present needs?—*A.*—That is what I mean, also the forms are beautiful. It is the case of education again—educate craftsmen to see that cheap and excessive decoration is bad.

Q.—Referring to pottery, Mr. Low asked whether you knew anything of the work done in the Bombay School of Art. Now, is there any system in any of the various schools of art by which people engaged in teaching go periodically from one place to another to see other schools, and to find out how the same kind of work is done in such schools?—*A.*—That very point came up at a meeting of the principals of the art schools; there are 5 in India we happened to meet; we had a museum conference at Madras and we put up a proposal that the principals of the schools of art should be allowed to meet periodically and to tour, but I am sorry to say that it was not sanctioned.

Q.—Did they make a representation to the Government?—*A.*—We put in a proposal that we should be allowed to meet periodically at a fixed place with the idea of studying each other's methods, comparing notes upon what was being done and so on.

Q.—In the same section you say: "The peculiar circumstances by which metal has satisfied most of the requirements of the Indian population are not likely to continue indefinitely." I do not quite know what you mean by the peculiar circumstances by which metal has fulfilled the requirements of pottery?—*A.*—I mean to say that the people in the country have relied upon metal for drinking purposes, eating, cooking, and other purposes in which the European generally uses glassware or pottery.

Q.—But why do you say it is going to be replaced by pottery?—*A.*—It is being replaced. Before the war foreign pottery was being imported, cheap earthen-ware, china and glass, and all that.

Q.—Is the use of metalware due to the habit of the people in cleaning every vessel thoroughly?—*A.*—Yes, that is the peculiar circumstance I referred to, but I don't think that the prejudice in favour of metal will continue.

Q.—I believe it is the practice amongst certain people that if they eat off an earthenware vessel, after one use the vessel must be thrown away?—*A.*—I have heard so.

Q.—Because it cannot be thoroughly cleaned?—*A.*—No, that I take it is due to purity.

Q.—So you think glass and pottery are in natural demand to serve the purpose of household utensils?—*A.*—Yes; not only for pottery but there is demand for decorated ware, railway tiles, and so on; we could make them here, we have got clay, we have got materials.

Q.—We have been told that it is very difficult to introduce industries into the Punjab as it is a purely agricultural country. Is it due to want of capital, want of labour, or want of technical skill?—*A.*—It is certainly not due to want of technical skill. I think as a province there is as much technical skill in the Punjab as anywhere else.

Q.—The question I wanted to ask is whether if you want to establish great industries here, should technical institutes follow or precede great industries?—*A.*—I think that in the case of Würtemberg the two are carried on together. This is mentioned in the report on agricultural industries in Ireland. Würtemberg was purely an agricultural State without any previous knowledge of industrial work and in three decades it developed into a highly-qualified industrial State indeed.

Q.—Owing to establishment of technical institutes?—*A.*—Owing to the initiative of the State.

Q.—There must be some basis on which to build these technical institutes. Must there not be some kind of industry first for which this technical institute was required?—*A.*—I think the reason was that it was an agricultural State in which the people were very poor and could not make sufficient livelihood on agriculture.

WITNESS No. 382.

LALA MULK RAJ,—*Bari Doab Bank, Lahore*

WRITTEN EVIDENCE.

Indian Banking in the Punjab.

THE first Indian Bank in the Punjab " The Punjab National Bank " was started in 1895. The People's Bank and Amritsar Bank followed in 1901 and 1903 and the Punjab Co-operative Bank and Lahore Bank in 1905 and 1906, respectively. After 1906 and up to 1912 the increase in the number of Indian banks was very rapid but these banks with few exceptions were small, the three-fourths of entire working capital of Indian banking, *viz.*, 4 crores-and-a-half being in the possession of the above-named banks.

2. In respect of the subscribed and paid-up capital the People's Bank headed, closely followed by the Punjab National Bank. The Punjab Co-operative Bank came third with a paid-up capital of Rs. 8,41,000 against 10 lacs subscribed or 84 per cent.

3. These banks were spread like a net-work all over the Punjab, Sindh and parts of United Provinces where they were helping trade and industry. An idea of their usefulness may be formed from the fact that they had above 200 branches, some of them in remote corners of the Province gathering money from the most shy persons and places. The business was expanding, and it was expected that in a few short years, they would become most important factors in the development of the land. The directorates although not consisting mainly of businessmen included businessmen as also other men of position, ability and wealth. In some cases they were composed of men coming from upper middle classes and wielding great influence in their class. Most of them held large number of shares in the institutions to which they belonged. In the Punjab Co-operative Bank the capital owned by the directorate amounted to about one-fourth. The staff was inexperienced in the beginning but work trained them and about the time of crisis most of them had 7 to 18 years' experience at their back. As for their integrity I may mention that during 10 years' life of the Punjab Co-operative Bank out of a staff of 11 officers only one man was guilty of defalcation of a few hundred rupees. As a rule managers of branches in Indian banks in the Punjab are not given powers to make advances but 3 managers of the Punjab Co-operative Banks were given independent powers to make advances up to Rs. 1,000. I have found loans given by them safe without exception. The worst fault of Indian banks, however, was their disunion. Every one was jealous of the others and spoke ill of them. In their zeal for their own advancement they did not hesitate to denounce the rest. In fact the political history of India got repeated in the attitude of these banks towards each other.

4. Personalities also crept in. Lala Harkishen Lal's wealth and position excited envy in more than one quarter and a class gradually sprung up who commencing with Lala Harkishen Lal and his policy of converting gold into iron and bricks, extended their attacks to embrace everybody styled Managing Director, rich or poor, good or bad and to every institution that employed them. The banks remained inert and did nothing to counteract the adverse effect of these attacks.

5. They also failed to get into touch with British officials who were allowed to form their opinion of Indian banks from reports from interested quarters. This aloofness caused misunderstandings which in absence of a regular channel of communication remained unverified and unremoved.

6. They further failed to secure and cultivate the sympathy of the Anglo-Indian banks in the Punjab whose unfavourable impressions derived from the official world were naturally strengthened by vested interests.

7. These were the formidable forces arrayed against Indian banking in 1912. A genius was required to utilise them for the destruction of all, good, bad or indifferent and such a destructive genius was supplied by the retirement of Rai Bahadur Mool Raj, M.A., from Government service. He exploited and got exploited all the forces that could be commanded for destruction. Tongue and pen were both used freely and a religious paper was got under control and converted into a weapon for the financial ruin of the country.

8. The result is known all over. The fright created mistrust and a run upon Indian banks commenced. The People's Bank and Amritsar Bank after 9 months' struggle and payment of a fifth of their deposits had to close their doors on the 19th September 1913. Bank after bank then tumbled down up to the end of 1914, the Punjab Co-operative Bank amongst them in September 1914, after paying 46 lakhs out of the total deposits of 63 lakhs.

9. It was unfortunate that no attempt was made by anybody to save these institutions. The moneyed men who are not many in this Province were frightened, the vested interests were naturally inimical and Government apathetic. Nobody realised that the existence of the Indian banking was the most essential condition of industrial development of the country and none made efforts to stem the tide of disaster.

10. I have fully described the causes of the disaster in my evidence before the Maynard Committee which may be taken as part of my note. My views were also given incidentally in my speech to the share-holders of the Punjab Co-operative Bank in general meeting held on 9th instant the proceedings* of which are enclosed.

11. I am sorry I did not know till yesterday afternoon that I have to give evidence which is fixed for to-day. The time at my disposal is too short for preparing a detailed statement as to the condition of each bank which I should like to furnish particularly to meet the charge of unsound business methods which has now replaced the theory of insolvent banking of three years back happily exploded.

ORAL EVIDENCE, 15TH DECEMBER 1917.

Hon'ble Mr. H. J. Maynard.—*Q.* You were the Managing Director of the Punjab Co-operative Bank ?—*A.*—Yes.

Q.—Do you remember a meeting which was held in November 1913. I have got the proceedings before me—where the thanks of the share-holders were recorded ?—*A.*—Yes.

Q.—Do you recollect who they were to whom special thanks were recorded ?—*A.*—Yes.

Q.—They included certain officials, didn't they ?—*A.*—Yes.

Q.—And also certain other persons, as well as officials ?—*A.*—Yes.

Q.—What was your impression of the attitude of the officials towards the bank ?—*A.*—I was promised assistance to the extent of 10 lakhs, out of which one lakh was given to me on my personal security and that of another Director. I had made over to the Bank of Bengal securities worth 20 lakhs for an advance of 10 lakhs. This one lakh was given to me on the security of my own person and that of another. After that no further assistance was given me. This resolution refers to that assistance of one lakh, and not to the full assistance asked for.

Q.—Do I understand correctly that you had the other assistance ?—*A.*—The assistance for one lakh was given us, but not the other assistance. This refers to that one lakh on my personal security and that of another Director.

Q.—Then the other assistance was refused ?—*A.*—Yes.

Q.—One lakh was given by whose help ?—*A.*—That one lakh was given, but the assistance of 10 lakhs was not given, although securities to the extent of 20 lakhs were endorsed in favour of the Bank of Bengal.

Q.—The impression you got then was that those who helped you to get that one lakh had been sympathetic ?—*A.*—They were to that extent.

Q.—Had you any explanation as to why the other 10 lakhs were not given ?—*A.*—I made over a letter to your Committee of Enquiry, in which they said that they could not give any assistance.

Q.—You said that to the Committee of Enquiry ?—*A.*—Yes. I have got a copy of the shorthand notes in connection with my evidence, and there I explained to your committee that the full assistance was refused .

Q.—Without any explanation ?—*A.*—I could not ask them to explain. The letter was handed over to you.

Hon'ble Pandit M. M. Malaviya.—*Q.* Would you kindly tell us what it is exactly that you said before this committee?—*A.* I said that I had a consultation with Mr. Warburton, the Agent of the Bank of Bengal, and that the Bank demanded securities to the extent of 20 lakhs, consisting of pro-notes and a mortgage deed. Mr. Warburton recommended to the Directors that the 10 lakhs should be advanced to our Bank, but their head office in Calcutta refused. Mr. Townsend asked if there were any reasons given, and I said there were none. I had the letter and handed it to the Committee.

*Not printed.

Q.—Will you kindly tell us how the question of your asking for help arose; at what stage of the business?—When this run began to be made on the bank were you able to meet the demand?—*A.*—For a considerable time.

Q.—How much?—*A.*—I cannot say now without consulting my books; but a very considerable sum of money was paid.

Q.—What was the total amount of your deposits at the time?—*A.*—63 lakhs.

Q.—You say, "Bank after bank then tumbled down up to the end of 1914, the Punjab Co-operative Bank amongst them in September 1914, after paying 46 lakhs out of the total deposits of 63 lakhs." So that you had paid 46 lakhs out of 63 lakhs before you closed?—*A.*—Yes.

Q.—Was it at this stage you approached the Bank of Bengal, or before closing?—*A.*—We were trying to get help from every quarter we could. Gradually we were able to pay, but when there was no cash left, we had to stop.

Hon'ble Sir R. N. Mookerjee.—*Q.*—What was your paid-up share capital at that time?—*A.*—Rs. 8,41,000 out of 10 lakhs subscribed.

Hon'ble Pandit M. M. Malaviya.—*Q.*—That is 84 per cent?—*A.*—Yes.

Q.—What was your reserve?—*A.*—Something like 4 lakhs then.

Q.—At the time you closed?—*A.*—Yes.

Q.—In your speech you said it was 7 lakhs?—*A.*—It is now Rs. 7,86,000; by the end of December it is expected to rise to Rs. 8,41,000.

Q.—What is the amount you have to pay now?—*A.*—Rs. 4,90,000.

Q.—To your depositors?—*A.*—Yes.

Q.—What is your security?—*A.*—Nearly 22 lakhs.

Q.—Including this Rs. 8,41,000 of reserve?—*A.*—Yes.

Q.—You could not secure any help from any other source?—*A.*—I tried Bombay, but it was a far-off cry. I went up to Calcutta later and saw a Marwari friend of mine. He said that the war had upset him, and he would not make an advance during the period of war. I wanted 7 lakhs, but the monied men here also were frightened and would not advance.

Q.—How much have you paid to your depositors?—*A.*—Twelve lakhs on account of deposits, and 2 lakhs on account of interest, since the liquidation began. In the liquidation we are paying interest to depositors.

Q.—When do you expect to pay up the balance, if you don't receive any assistance from outside?—*A.*—If I don't receive assistance (which I don't need now) we will probably finish the liquidation in November next, if not earlier.

Q.—Will you at that time have paid deposits in full, with interest?—*A.*—Yes.

Q.—Do you expect that anything will be left for shareholders?—*A.*—They will have Rs. 2 for every rupee they have put in the share capital.

Q.—I congratulate you on your position, even on your dividends. But what was it that brought about the downfall of your bank?—*A.*—Because there was a run on all banks. The people got frightened, and they rushed for their money. We tried to make them reasonable, but they would not be reasonable. I may add that I invited some businessmen, at the request of the depositors, to examine the assets of the bank, and nine of them, four from Lahore, four from Amritsar, and one from Alwar State, certified that the bank was very safe, but in spite of that the people would not be reasonable.

Q.—You say on page 3 of the speech* attached to your note, "You will naturally ask why? My reply to your question is that the downfall of Indian banks is too recent an event for a dispassionate judgment being given as to its causes, which must necessarily be many." Then you go on to say, "It will blame the investing public for fright, Indian banks for disunion, Anglo-Indian banks for hostility and Government for apathy." You have spoken of the fright of the investing public, but could you not bring about a combination of Indian banks?—*A.*—I have also spoken of the disunion of Indian banks. I tried, when there was a rush on the Peoples' Bank, to bring together Indian banks, but failed.

Q.—You speak of the hostility of Anglo-Indian banks?—*A.*—I am very sorry to say what I have said, but it is well known that there was no love lost between Anglo-Indian and Indian banks.

* Not printed.

Q.—To what do you ascribe it ?—*A.*—To vested interests.

Q.—Or to short-sightedness ?—*A.*—No, to invested interests and wrong impressions formed.

Q.—Would their interest have suffered by the expansion of your Indian banks ?—*A.*—The expansion of Indian banks must necessarily have told on their deposits, if not on their business.

Q.—Do they draw deposits from the same sources as the Indian banks do ?—*A.*—Yes, to a great extent.

Q.—Do you think if there was a State bank in the Punjab, amenable to the control of the Government of the Punjab, the chances of your receiving help would have been much greater ?—*A.*—I said that to the Maynard Committee, I said that there was no use having the Bank of Bengal in this province, but that we should have the Bank of Punjab.

Q.—You think then that if there was a State bank amenable to the control of the Government of the Punjab, you would have had a greater chance of receiving assistance than you had in the circumstances in which you were placed ?—*A.*—Yes.

Q.—Do you think the public will subscribe to a bank which would be under the control of Government ?—*A.*—Oh yes, there would be no difficulty.

Q.—There would be no difficulty about capital ?—*A.*—Not if there was Government patronage behind it.

Q.—You say in your note that " After 1906 and up to 1912 the increase in the number of Indian banks was very rapid, but these banks with few exceptions were small, the three-fourths of the entire working capital of Indian banking, *viz.*, 4½ crores, being in the possession of the above-named banks." Is that a rough guess ?—*A.*—About the correct figures.

Q.—Then the first banks you have named which came into existence owned 4½ crores, of which three-fourths of the entire working capital was in their possession ?—*A.*—Yes.

Q.—Of these the Punjab National Bank is going on, and you are going to pay depositors with interest ?—*A.*—The Punjab National Bank has also suffered, but is quite stable.

Q.—The other banks have closed ?—*A.*—Yes.

Q.—Are you in touch sufficiently with the affairs of the Peoples' Bank to express an opinion as to the possibility of its being started again ?—*A.*—I think it is probable that the Peoples' Bank can be started with a decent scheme.

Q.—You say in this note of yours, " Payments of deposits are no doubt likely to be made, but they will be not due to, but in spite of, official liquidation." Do you mean to say that payments should have been made ?—*A.*—Yes, payments will be made in full nearly.

Q.—You think that indicates the general soundness of the position ?—*A.*—Yes.

Q.—You express yourself very strongly against official liquidation. Are you not yourself a liquidator of your bank ?—*A.*—This is private liquidation, *i.e.* voluntary liquidation. I have got another bank to liquidate officially.

Q.—You express yourself very strongly in favour of non-official liquidation. There is no official liquidator, as you know ?—*A.*—They are official liquidators.

Q.—They are not officials of Government. They are liquidators appointed by the court ; you mean them ?—*A.*—Yes.

Q.—If you have liquidators appointed by Government, who were paid salaries only, and not by commission, do you think matters would be different ?—*A.*—Yes.

Q.—From your experience and knowledge of liquidation proceedings that have gone on, do you think the present system of liquidation by liquidators appointed by the Court has told favourably or unfavourably on the share-holders ?—*A.*—Very unfavourably in this province.

Q.—Have the charges been reasonable ?—*A.*—The charges have been extravagant.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—How many years' experience have you got of banking in this country ?—*A.*—Thirteen years, including 3 in liquidation.

Q.—What are the causes of these failures ?—*A.*—I have given the causes in my note.

Q.—Don't you think the chief cause was inexperience of the management ?—*A.*—No.

Q.—You say that all these banks lent money to industries ; for what time and on what security ?—*A.*—As a rule not for a very long time. In some cases these loans were long. In one case, we lent money for 5 years ; on promissory notes or time hundis.

Q.—Which, when the rush came, you were not able to realise ?—*A.*—You must understand that we paid 46 lakhs out of 63. That is all that any bank would have paid.

Q.—Do you want industrial banks, or banks on the system of the Presidency Banks ?—*A.*—There should be as many banks as possible.

Q.—A bank to help industries like the Bank of Bombay or Bengal ; or an industrial bank quite separate ?—*A.*—In the Punjab, industries at present do not exist. In the near future any good bank will do, but eventually industrial banks must come in. At present there are scarcely any industries in the Punjab.

Q.—The banks in the Punjab were giving money only for short periods, calculating the deposit period nominally ?—*A.*—Yes.

Q.—Then it was bad management that brought about the failures ?—*A.*—Not necessarily, because the conditions of things in Bombay are different from the Punjab. There you have got a lot of current accounts. The principal funds of the Bombay bank consist of current accounts generally. Here current account is nothing. All deposits are generally from 12 to 24 months, with a little sprinkling of short-term deposits ; so conditions are entirely different.

Q.—You have to pay on certain date certain deposits that are due ?—*A.*—Yes, this was calculated and was guaranteed in every case.

Q.—The banks were started with authorised capital of 10 crores, subscribed capital of 4 crores and 12 lakhs, and paid-up capital only 14 per cent ?—*A.*—That does not give you a correct idea. If you will take off the few banks that had a large authorised capital and very little subscribed capital, you will arrive at a proper conclusion. The Punjab National Bank had paid up something like 50 or 60 per cent, so had the Peoples' Bank. Most of these important banks had a very decent amount of capital subscribed and paid up.

Q.—But you think that the banking system was good, although they were not even able to pay ?—*A.*—I beg your pardon, I did not say that.

Q.—Except one or two banks ?—*A.*—The whole system was destroyed. How could you expect them to pay ?—The credit of no country can be converted into cash at a moment's notice. That is not possible.

Q.—But you yourself have said that you had no current deposit money ?—*A.*—Very little current deposit money, yet you could not convert the entire credit system of the country into cash.

Q.—But the money you gave on security ; those monies were quite safe, and in due time they should have come ?—*A.*—They did come, and that enabled the banks to tide over difficulties. I don't believe that any bank in the world can realise all its assets at an appointed time.

Q.—What are your assets now that you cannot realise 8 lakhs ?—*A.*—I have just told you that I am realising.

Q.—What are they : demand notes ?—*A.*—Demands notes in some cases, decrees in other cases. Demand notes have been converted into decrees.

Q.—You must have given money on one signature ?—*A.*—In some cases on a number of signatures ; and in other cases on one.

Q.—Are those people solvent ?—*A.*—Entirely.

Q.—Why don't you realise it ?—*A.*—The whole banking system has been destroyed. Where are the men to advance money ?—They have got property, but how can they cash the whole thing ? That is not possible.

Q.—But other banks generally manage from borrowed capital ?—*A.*—Which banks ? I have not seen any record of other banks which have made capital from borrowings.

Q.—You say, " They also failed to get into touch with British officials who were allowed to form their opinion of Indian banks from reports from interested quarters."

Why were they not in touch? You say, "This aloofness caused misunderstandings, which, in the absence of a regular channel of communication, remained unverified and unremoved." Why?—*A.*—There was no regular channel.

Q.—You can approach any official of Government?—*A.*—That was the fault of the banks; they did not approach properly. This is one thing for which I blame them. They did not approach properly.

Q.—You think if an industrial bank is started with a Government guarantee on the capital, the people would put their money in?—*A.*—Yes, any amount.

Q.—And with Government expert advice on different industries, if Government advanced money, do you think that would encourage industries?—*A.*—You have asked me if capital would be subscribed; then you want me to reply if expert advice would serve a useful purpose.

Q.—Expert advice to start industries. If Government is satisfied with its expert advice on a subject, say, sugar, and the Board of Industries advises that this industry is all right and safe; and if Government advanced money through that bank to that industry, do you not think the industrial awakening will come to the Punjab?—*A.*—I don't know I have not thought over this matter.

Q.—Then you want provincial banks for the Punjab, just like the Bank of Bengal?—*A.*—Yes.

Q—You think if a Bank of Punjab would have been here, and if the Directors were in touch with the people, they would have been able to assist other banks here?—*A.*—Yes, I have also said that that bank would have been susceptible to the influence of the provincial Government, which the Bank of Bengal is not.

Q.—Do you think that the jealousy of the European banks came in the way, and they did not help in any way because they had the monopoly?—*A.*—Vested interests I have said.

Q.—Do you think the present Companies' Act, 1913, is a proper safeguard for banking?—*A.*—I am afraid more than a proper safeguard.

Q.—Do you think if you have more stringent laws, that would improve the banking and industries of the country?—*A.*—No.

WITNESS No. 383.

RAI SAHIB LALA MIRI MAL, *Executive Engineer, Raya Division, Upper Chenab Canal.*

WRITTEN EVIDENCE.

I.—Financial aid to industrial enterprises.

During the years 1907—12 I had carried out experiments to see if good Portland cement could be prepared from materials available in Northern India. To do this I had to spend a good deal of money on providing a small private laboratory and a good deal of my time in search of materials and conducting the experiments. When I was thoroughly satisfied that very good Portland cement could be made with local materials at very low cost, with the assistance of my friends I tried to form a joint stock company to raise the required capital, but failed to do so. The reasons why I failed were:—

(*a*) At that time one or two newspapers of Lahore were bitterly attacking Lala Harkishen Lal and the banking and other concerns under his management.

People in the Punjab were beginning to lose confidence in banks and other joint stock undertakings.

(*b*) Most of the capitalists and business men, my friends and I approached, wished us to apply and obtain from Government a guarantee to purchase a certain percentage of our outturn before they could help us in raising the required capital. But we felt diffident to do so.

Q.—2.—Banks, capitalists, Government servants and other small investors?

Q.—3.—Yes. I think in many places more cotton-ginning factories have been built than can be maintained in full time employment. During 1912 there were about 25 such factories in Multan ? Only 2 or 3 of these used to work and the others remained closed.

Q.—5—I think all and every method, described in the question, of giving Government aid is good ?

Q.—6.—There should be Government supervision in cases (1) to (6) of Government aid.

Q.—14.—I think if it is desired to give an impetus to industrial enterprise in India, there should be no limitations on Government aid to a new enterprise if it competes with an established external trade ?

NOTE.—*Witness did not give Oral Evidence.*

WITNESS No. 384.

MR. D. HARI GOPAL DUGGAL, *Managing Proprietor, Krishna Cutlery Works, Wazirabad.*

WRITTEN EVIDENCE.

Financial aid to industrial enterprises.

Capital.

I HAVE personally no experience of raising capital, but I think the capital is mainly drawn in India from—

(*a*) Private individual sources.

(*b*) By entering into partnership and thus contributing to the common capital in different shares, and

(*c*) It is also brought into play by means of forming joint stock companies Sometimes capital is raised by means of loan, the banks where the hoarded money of the masses is brought into play also lending.

Besides the sources mentioned above Local Funds, *e.g.*, District Boards, Municipalities and also Government should lend money on favourable terms to well-deserving enterprises. There should be started good many private banks with branches in all part of the country, the Government should supervise the working of these banks with as little interference as possible, commensurate with the safety of the banks, and should support these banks by words and deeds, even sometimes meeting the crisis with money deposits.

Government assistance.

The forms of the system mentioned in question No. 5 are all useful in their own time and place. To start pioneer industries assistances in forms No. 1 and No. 2 and No. 3 are most useful. The assistance should be stopped as soon as the concern started is established as a paying concern. And I would also recommend Government supervision where assistance is given in form No. 1 but where the assistance is given in forms Nos. 2 and 3 the Government should have control but not exclusive—the Government control should be by means of sending in Directors, advising and having a power of veto, which should be very sparingly used. Auditing should be compulsory in all cases where Government monetary aid is given. If the auditing show any mismanagement Government aid should be stopped. Other forms of assistance can usefully be employed even in industries which are going on but require a strong dose of development. In case of pioneer factories form No. 1 should always be used but as soon as there are sufficient factories of the nature, preferential treatment should be stopped but this should always be employed where home industries compete with foreign industries. Auditing should also be a necessary element in cases of joint stock companies.

Pioneer factories.

Government should pioneer industries but should always have the public interested in these such as inviting shares from public at large, the Government contributing the greater share of capital, but they should never be turned into permanent Government institutions as the Government's object should never be gained from these. As soon as the pioneer factory is established as a paying concern the Government should withdraw but if in the meanwhile certain other factories of the same nature are established the Government should close the pioneer factory leaving all to compete fairly. The chief object of pioneer factories should be to draw the attention of the people to train them in certain kinds of industries and they should never go beyond this legitimate goal into the pail of profit.

I have practically no experience of financing agencies but banks serve the purpose very well and as I have said above Swadeshi banking should be encouraged greatly. Exisiting or new banking agencies can lend money to private traders and firms. I think the banks should not start industries of their own. I think there is a need of Banking Law. **Financing agencies**

Co-operative societies have helped in raising the status of poor zamindars in our Province, but I think they can very usefully be employed in encouraging and improving village cottage industries such as weaving, etc. As to the organisation of co-operative societies I think simplicity should be the rule and the Government should supervise, help and facilitate the working of these societies. **Co-operative societies.**

As I have said above Government aid should chiefly be given in infant trades, and if other private fresh enterprises are started the Government should help these also if possible. Money aid should not be given in so great quantities as to oust all competition except in cases of pioneer factories. **Limitations to Government aid.**

As regards question 14 I think the Government's object should be to defeat external trade and to encourage home trade and so not the least limitation should be placed on Government but it should flow more liberally if the aided industry competes with a foreign one. I would go so far as to suggest the taxing of external commodities in India simply with the object of protecting home industries. Protection is the only thing which can in reality help home industries. Indian industries are still infants and they should in all fairness be protected from the danger of foreign competition and the only remedy is to weaken the opponent by means of heavy taxation.

Technical aid to industries.

The only way known to me in which Government help in the direction has flowed out is awarding scholarships to deserving young men for training abroad. So far these young men have not done much in the way of starting new industries for want of capital and fear of external competition. I also think these young men when abroad are not given the opportunities of learning very much, the factory to which they are sent not liberally helping them. So I think apart from scholarships the Government should see and even should pay to attain the necessary object that the factories give all knowledge which young men going to them require at their hands. These young men should be taken up in pioneering industries and should also be lent to existing or new enterprises, free of cost. The functions of the expert should only be advisory. The experts should be at liberty to popularise the results attained, but it should only be done generally and should never reveal anything which is looked upon in the way of trade secret. As to research work I will deal later on. Agriculture in the Punjab needs demonstration factories most. The Government should undertake the growing of commodities such as yellow cotton, etc., and thus give people an impetus to do the same. The Government should also provide cultivation on improved styles in Government-owned demonstration farms. Raw material plays the most important part in the industrial development of a country and I believe India is very rich in all sorts of raw material and I believe the mineral power of India has not been explored to the extent required. I think more surveys should be carried on by private institutions aided in money and advice and experts by the Government. **Scholarships abroad.** **Demonstration factories.**

Consulting Engineers are very well as an institution but they should never be allowed to purchase machinery and plants for private firms or individuals. They should at the most recommend reliable foreign firms but at the same time these recommendations should never have an element of command in them. **Consulting Engineers**

Assistance in marketing products.

As a rule commercial museums are useful in giving information to the public at large. They have also an educative advantage in them. They should be popularised, and at least the headquarters of every Provincial Government should each have one. They should be managed by the Board of Industries (the term I will explain later on). The guiding principle of their working should be advertisement of home products and so I would recommend "Avoidance of foreign products" together with "prominence to not well-known home industries." **Commercial museums.**

To dispose of the cottage industry products there is a class of people known as brokers. Their employment saves time and botheration to the labourer and it may be developed and improved but I cannot recommend any departure from the line. Travelling exhibition of these industries will surely be beneficial and I would recommend that these exhibitions should also have training of improved methods as their objects. Thus I would **Sales agencies.**

like them to deal with the exhibiting of improved methods as well as improved products. They should stay at every village according to the importance of the labourers.

Exhibitions.

As a rule these are beneficial, but again I would like them to have as a special object the education of the people rather than the merely bringing together of seller and buyer. They should care more for showing the process than mere products. I would recommend exclusion of foreign-made goods.

They should be popular in character and managed by the Board of Industry (a term to be explained later on).

Trade representatives.

Trade representatives should be appointed in Great Britian, Colonies and foreign countries. They should be elected by the Board of Industries, their duties should be advisory and they should watch over the interest of India's trade.

There should be Boards of Industries in every province under an Imperial Board formed by the Provincial Boards by means of election. The Provincial Boards should have inter-trade relations.

Government patronage.

No country can develop industrially unless the Government of the country extends its helping hand. Government's clear duty is to buy all its wants at home centres ; and giving a claim on call to the people by means of exhibiting the things required will meet with response, and so I don't see any harm if lists of foreign articles used by the Government be exhibited in the exhibitions.

Banking facilities.

I think the Government should not monopolise banking; it should encourage Swadeshi banking. Supervision by means of auditing and help in time of need are the two things which will make the banks grow up like anything. I do not want Government to form Industrial Banks. It may extend patronage.

Other forms of Government aid to industries.

Land policy.

The Punjab is an agricultural Province in the main. Short-time settlements invariably accompanied by rise in land rents is a great impediment in the way of good produce. The poor farmer does not care to improve the land as the improvement will bring the greater land revenue, leaving the poor farmer as before. I would recommend settlement at least at an interval of 30 to 50 years.

Land Alienation Act also hampers the purchase of land for industrial purposes. Again for this very Act land cannot accumulate in the hands of educated people and consequently no improvement is made in farming. At least the Government should so modify the Act as to allow purchase for industrial purposes. Or the Land Acquisition Act should be so modified as to admit acquisition for industrial purposes. In short every facility should be accorded for the purchase of land for industrial companies.

Wherever possible the use of water, *e.g.*, as motive power, should be given to companies on long leases on the payment of water rate.

Training of labour and supervision.

I have had no experience of technical or industrial schools, but I can say that a man having primary education proves a far better one than the one who has no education whatsoever. My experience emboldens me to say that a small amount of training as an apprentice turns a Punjabi youth into a skilled labourer. I would recommend that Industrial schools be organised as part of the approved firms. All Industrial schools should be under the Education Department. The Education Department should in all matters of the kind be guided by the advice of Board of Industries.

Training of Supervisors.

As to the training of supervising and technical hands (1) there should be Colleges of Commerce and Technical Schools and Colleges. Deserving and capable men should be sent on scholarships to foreign countries and also in Government-owned and Government-improved factories in India. If anybody wants to go to foreign land at his own expense the Government should see that he gets the required knowledge at the factory he goes to.

It would be better if a uniform standard of an examination is prescribed for Mechanical Engineers, but it should not be a very high one, so that Mechanical Engineers of all Provinces should be interchangeable.

General official administration and organisation.

Provincial Boards.

I think there should be a Board of Industries for each Province and a Director of Industries appointed by the Government for each Province. The Board should be recruited if possible by election or nomination from amongst the leading men in the Province in the industrial line. The Government may, to represent itself, nominate a number of

men to be Members of the Board. The men to be nominated must invariably be experts, technical specialists or businessmen. The Government nominees should always be in minority on the Board. The Director for each Province should be an official appointed by the Government for the discharge of executive functions. The Director should be subordinate to the Board of Industries.

All the work as regards Government aid, training of experts, lending of experts to private firms, the organisation of museums, exhibitions etc., should be in the hands of the Board. The Board should be represented in the legislative council of the Province.

Again an Imperial Board with a Director as above should be constituted, the members coming to the Board by means of election from various provincial boards and Government nominee . The Imperial Board should start and manage pioneer factories, send representatives to foreign countries, supervise the working of the provincial boards. Autonomy on the whole except in matters concerning the whole of India should be the key-note. Imperial Board should be represented in the Imperial Legislative Council. **Imperial Board.**

The cottage industry should receive the special attention of the Board thus constituted.

Again I would like the Government to leave apart a certain sum of money for the industrial development of the country every year and this money should be spent in conformity with the wishes of the Board. As far as practicable wishes of the Board should be carried into effect but the Viceroy in Council should have the power of veto.

Organisation of technical and scientific departments of Government.

After the formation of the Board of Industries there should be Imperial and Provincial Institutes of Scientific Technical and Technological Research. They should be directly under the Provincial and Imperial Board of Industries. The Imperial and Provincial Boards should organise these research institutes. These research institutes should not overlap in their function but should co-ordinate with one another. The Imperial institutes should be distributing offices and assign to each provincial institute special duties to be carried into effect but at the same time they should serve as advisory bodies to the Boards of Industries. Research institutes should send in men to foreign countries to study foreign methods.

Referencel ibraries should be started in each province. Local centres where special industries are specially carried on should have all the up-to-date literature on the subject. Each Province should have a commercial college under the provincial university but the Board of Industries should have an important voice in prescribing the syllabus. **Reference libraries.**

Local bodies, *e.g.*, Municipalities and District Boards, should start Industrial Schools and pioneer industries but with the sanction of the Board of Industries.

Government organisation for the collection and distribution of commercial intelligence.

Every Board of Industries should own an Industrial and Trade Journal. The Journal should not only give statistics but should also undertake educative work, *e.g.*, it should deal with results of researches carried on by different institutes, foreign industries, pioneer and demonstration factories, etc. The cost of the Journal should be mainly met by the Boards and it should have a nominal subscription.

General.

I am engaged in manufacturing cutlery. The chief difficulties I meet with are— **Cutlery.**

(*a*) lack of steel specially in these days of War ;

(*b*) want of an instrument in my hand to keep the labourers on to their work, the force of Act XIII of 1859 having been greatly lessened by Chief Court Rulings ;

(*c*) want of machinery ;

(*d*) the trade being in its infancy foreign competition greatly retards progress and so on.

To avoid these difficulties I would recommend a pioneer industry for the making of steel from Indian iron ore. Tatas, I believe, have undertaken the work but I believe far more can be done in the line.

Law of Labour should be made more stringent.

Machinery should be supplied on favourable conditions, and preferential treatment should invariably be accorded in all Government purchases.

Even for the supply of instruments such as files we depend upon foreign markets. The difficulty should be remedied if possible

NOTE.—*Witness did not give Oral Evidence.*

WITNESS No. 385.

MR. WILLIAM RAITT, F.C.S. *Chemical Engineer and Cellulose Expert, Consulting Cellulose and Paper Expert attached to the Forest Research Institute, Dehra Dun, United Provinces.*

WRITTEN EVIDENCE.

In the following statement I have endeavoured to express what is my attitude and opinion generally to those questions in the Commission's list bearing on the establishment of industries which are either new to India or which propose to render new sources of raw material available for old industries, and for which Government co-operation is essential by reason of the necessary primary requirements of such industries—land, raw material, water-power, fuel, minerals, etc.—being wholly or mainly under Government control. The statement is based on my own experience during some years of effort on behalf of one such industry, *viz.*, the manufacture of pulp for the use of paper-making and other cellulose-using industries. I add the following notes of my experience as a whole :—

I am a Chemical Engineer and a Fellow of the Chemical Society who has specialised in Cellulose Chemistry and the manufacture of paper and paper-pulp. I have had considerable practical and commercial experience in the management and direction of factories in England and India. My Indian experience consists of eight years of factory management and ten years devoted wholly to research work and exploration for new sources of raw material. For six years of the latter I have been attached to the staff of the Forest Research Institute as Consulting Cellulose Expert. I have also carried out surveys of the paper and pulp-making resources of one district of Assam and of the State of Mysore, and am now engaged on a similar survey of Kashmir at the instance of the State Darbar.

Industrial surveys.

I think that what is required is a survey of the undeveloped industrial resources of the country. I can best indicate the proper character of such survey by citing a case where it has been done and the procedure of anyone wishing to take advantage of it. An investor in England desirous of engaging in the exploitation of any of the natural resources of *Sweden* applies to the Swedish Consul-General in London quoting the industry he is interested in. By return of post from Stockholm he will receive a map of the country drawn up with special reference to the industry he is enquiring about. Let us suppose it is saw-milling and wood-pulping. The map will show the unleased forest areas open to exploitation, the rivers and tributaries down which he can float timber, water-falls available for power, sites suitable for factories, lines of communication to seaports for export of products, towns and villages near suggested factory sites which may be relied on for labour, nearest sources of lime and other chemicals required. An accompanying booklet, also drawn up with sole regard to the requirements of the industry, will give him the estimated outturn of the forest areas mapped, estimates of the amount of water-power available, costs of lime and other chemicals, local labour, transport to seaport whether by road, rail, canal, river or lake, building materials, royalties, rents, taxes, customs, duties, etc. He can make up in his London office satisfactory estimates and, when satisfied with the prospects, need only go to Sweden to inspect the one or two sites he has selected as most likely to suit him. If he contemplated similar operations in India he would have to prospect the whole country and because that would take years *he does not do it.* I have observed a greater ignorance among London business men as to industrial possibilities of India than of our Colonies and Dominions. Many of these do advertise what they have to sell on similar lines to Sweden. Such information as is available about India is entombed in departmental reports the existence of which he is unaware. If he should be directed towards it the information given is probably to the effect that here or there so many thousand tons of raw material is available but there is either no information given as to its quality and suitability and to the manufacturing facilities associated with it—water-power, fuel, chemicals, labour, transport, climatic influences—or it is incomplete and not bonded together with regard to the effect of each item upon what should be the corner-stone of the whole effort, *viz.*, an estimate of production cost, or data upon which such an estimate can be made. The departmental officer is invariably most painstaking and exact in the information he gives but his deductions are not necessarily those of an expert in the industry he is reporting on and he invariably misses something which, to the expert, is essential. At the Forest Research Institute a beginning has been made towards drafting reports on such lines but so far, for want of staff and experimental plant, they have been issued in admittedly incomplete form.

2. Where such surveys deal with raw materials which have to be converted into manufactured products by chemical or mechanical processes or both, an important part of the survey work must consist of laboratory investigation as to the suitability of the materials for the intended purpose and the discovery and establishment of methods of manufacture and types of plant calculated to obtain the best results. For it is invariably the case that such raw materials differ markedly both chemically and physically from

those now in use by the industry in question and neither the methods nor the plant in common use are suitable for them. It is necessary to carry the laboratory work into actual demonstration that its findings and recommendations are correct and yield practical results. The point will be clearer if I again quote our Dehra Dun experience. We have been able by prolonged investigation to select certain bamboos and Savannah grasses as being useful sources of paper-pulp, to discover their chemical and physical constitution and the extent to which these differ from materials in common use and to indicate the modifications of plant and treatment which will probably be found necessary when working them upon a commercial scale. On its negative side, that of rejection of unsuitable species, such work is final and conclusive and calculated to prevent money being wasted on them, but on its positive side the prospective manufacturer points out, quite reasonably, that we leave a large field untested and makes such criticisms as the following :—

(*a*) May not large scale tests on the lines you recommend only point out the need for further modifications of plant and methods ?

(*b*) Laboratory work, where everything is under perfect control, does not necessarily tell us what our unavoidable losses will be in raw material, pulp, chemicals, etc.

(*c*) We want to be supplied with sample parcels of pulp in sufficiently large quantities to be put on the market to test its value or to manufacture into paper with a like object.

Demonstration factories.

3. The answers to such criticisms can only be supplied by a *demonstration plant* attached to, and a necessary part of, the laboratory equipment where types of plant and manufacturing methods can be tested and compared and laboratory findings proved or corrected. It is not necessary that they should be on a factory scale or worked as commercial establishments with a strict eye to profit and loss. On the contrary they may be comparatively small but always large enough to compel factory methods to be used and to turn out pulp in marketable quantities. The investor does not expect complete balance sheets with costs of labour, freight, oil, packing, repairs and management, worked out to a decimal per ton of product. These minor charges are known and in any case they will vary with locality and the scale of operations and he can work them out for himself. Give him five tons of pulp and tell him it is the product of so many tons of raw material costing so much at a given point of delivery, that it is produced by such a method in such a type of plant at a cost for chemicals and steam of so much and he is satisfied. Such demonstration plants are not primarily intended as schools of instruction but there would be no difficulty in using them as such. For the purpose of demonstrating to the intending pioneer and investor the problems he was interested in or even of allowing him to work out his own ideas in, they would be invaluable. Such plants should be centralised : not Provincial or localised. In the case of pulp one such plant would be sufficient for the whole of India and Burma.

Surveys must be Imperial.

4. An industrial survey on these lines must be Imperial and sectional, the sections being individual industries. One of its important values would be that of comparison, elimination and selection. To be of the greatest value to an industrial pioneer, the reports should indicate to him where his requirements can best be met. They cannot, therefore, be confined to geographical or political limits. I would advocate the creation of an Imperial Industrial Survey dealing solely with the unexploited industrial resources and assets of the country. I am aware that this is an enormous task which will take many years to complete, but would prefer to regard it as one which was not intended ever to be complete, one which is always in process of being extended, amended and brought up to date. If done sectionally, beginning with one or two industries most in the public eye, fairly complete sectional reports would begin to appear at an early date. It would also be of value to the commercial and financial public to know that there was an authority in existence from whom they could obtain information or even special reports on subjects upon which complete reports had not yet been issued. The reporters in each section should be industrial experts possessing a knowledge of the scientific side of the industries they represent.

Subjects for which surveys are required.

Resources other than raw materials for paper-pulp which occur to me as worthy of survey are *water-powers* both natural and on canals and their relation to other undeveloped resources in their neighbourhood, as also their development electrically for the use of industries at a distance. *Minerals* also require attention, not so much perhaps as to their metallurgical value which is probably already well known, but in their relation to manufacturing industries requiring them. Pulp-making, for instance, is impossible without cheap supplies of lime. Then there are several forest industries which are possible but about which no satisfactory data exists. I instance the series depending upon and arising out of the *destructive distillation of wood*. Among purely chemical industries there is *alum* and *soda*, both of which are now being worked in a very crude and primitive manner.

Publication of the results of surveys.

5. The need for such surveys becomes greater when we consider for whom the information is required. The native of India, with few exceptions, will not invest in such industries although willing to follow after an initial financial success has been attained. We must therefore rely on the English investor who shows no aversion to them provided he has trustworthy information about them other than that supplied in promoter's prospectuses. We have not, therefore, to *cater* for an investor on the spot but for one in a far country who knows nothing by personal acquaintance or observation of what India has to offer. Such information as is now issued is not put before him in a manner which compels his attention and I rarely see the publications referred to in questions 82, 83, 84 and 87 on his table. If he receives them regularly most of them are of no interest to his business so he gets into the habit of paying scant attention to any and those which do deal with some aspect of his business are not sufficiently practical really to interest him. Usually he is too busy to read any commercial literature which has not a direct practical bearing upon his concerns but he *must* read, as a matter of daily or weekly business routine, his financial paper and the technical journal devoted to the interests of his own industry, and it is through these that such reports as I contemplate should be brought to his notice. In the matters we are discussing Government is in precisely the same position as an inventor or manufacturer who has a new line of goods to put on the market. He advertises them in the journal which circulates among the buyers he wishes to reach and gets them noticed or reported on by the editor. If advantage is taken in a practical way of the means of publicity now in existence I do not think there will be any need for Government to add one more to its list of publications which are now received with indifference. We have adopted at Dehra Dun such publication with our recent reports and with the happiest results. They have been published *in extenso* by the journals devoted to the paper and pulp trades and from them have been quoted by similar publications throughout the world. We have to recognise that each one of our unexploited industrial assets is, as a rule, of interest to one section of the commercial community only and we have to bring it to the notice of that section by the method and through the agency by which it is accustomed to receive all new ideas.

Concessions and grants.

6. After having by survey, demonstrations and publication attracted an enquiry from a suitable person the question arises as to how he should be dealt with. The impression current in commercial circles is that such pioneers are not welcomed, at the best are regarded as a nuisance, at the worst as mere concession hunters. Their applications are dealt with by a perfunctory and leisurely process occupying months and sometimes years. Letters are replied to at intervals extending from 15 to 45 days and negotiations end up with Government showing—in the words of an eminent civil servant—" a desperate terror lest somebody is going to make money out of us." Meanwhile, as capital will not wait, even for Government, the money earmarked for the scheme has probably been diverted elsewhere. Much of the delay complained of is no doubt due to Governments having themselves to acquire some knowledge of the assets they are being asked to deal with, a state of affairs which would be put an end to by the surveys I have indicated, and it is fair to add that such delays are not, as a rule, created by the executive departments (forests, engineers, geologists, etc.) to whom reference has to be made. These deal promptly with questions referred to them and in a spirit markedly different from the calm indifference of the secretariats. Such a system and such treatment is about the best that could be invented to scare pioneers off and gives reason for the maxim current in the commercial circles of Calcutta and Bombay that " if you can get what you want anywhere else in the world or from anyone else in the world don't ask a British Indian Government for it." It scarcely needs to be said that an intelligent system of dealing with industrial poineers would be the exact reverse of this. They should be welcomed as persons who propose at their own risk—and it is not necessary to advert to the serious risks all pioneers run—to put a value on and make a market for Government property. The rents and royalties Government is to get from them should be regarded as of trifling importance to the enhanced values to be obtained from those who follow in their footsteps attracted by their success, and Government's chief object should be to ensure that success by all the means in its power even to giving its goods for nothing. The inventor or manufacturer referred to in the previous paragraph would not hesitate to give several of his machines or consignments of goods for nothing to persons whose experience with them was likely to help in their introduction to the public at large. The " desperate terror lest somebody is going to make money out of us " should be abandoned in favour of a fear that he won't make money.

Below are a few answers to questions not dealt with in the foregoing statement,

Government pioneer factories.

Q. 8.—Never, unless a very special case can be made out. Governmental systems, methods and atmosphere are not those best adapted to successful commercial management. There is no "do-it-now " about them, no elasticity, and initiative is hedged about by rules

and precedents intended to check it. A local Government cannot pay an Expert Manager more than Rs. 800 a month without referring to the Secretary of State—while the reference is taking its leisurely course the Manager may have found a better job. A local Government declines to pay a Manager by result, *i.e.*, a commission on profits, because some sections of Indian society are supposed to be unable to distinguish between that and *dasturi*. A special case would be one in which *all* the keys of the industry were in Government's hands, in which the prospective profits were so large that even Government methods could not make a failure of it and of which the investing public were shy because it had hitherto been a monopoly of foreign countries. A case in point is the turpentine and resin industry as carried on in Government factories at Lahore and Bhowali, United Provinces. But even in this case I would have given the public an opportunity before deciding that they would not look at it.

To the subsidiary question under 8, when should such factories be handed over to private capitalists or companies? my answer would be—"as soon as ever you can get anyone to take them over."

Generally my position would be that if the public does not come forward to pioneer an industry which has been properly prospected and demonstrated by Government experts to have good profits in front of it and which is offered to the investor on terms by Government, then either the terms are not good enough or the investor has discovered some flaw in the argument. If a thing is good enough the public will take it up, if not, neither public nor Government should touch it.

Government assistance.

Qs. 5 and 6.—On general principlesI am opposed to spoon-feeding of industries. Usually financial help is demanded because the public have not sufficient confidence in an undertaking to provide it with a full set of teeth. But confidence is born of knowledge and the surveys I have indicated are intended to supply this. Special cases may, however, arrive in which it may be advisable for Government to assist in order to prevent the collapse of a promising venture. An honest mistake may have been made as to the amount of capital required to exploit properly and develop the industry In such a case it is almost impossible to get the public to come forward with a second subscription. If the industry is still considered sound it may be good policy for Government to come forward with help, which should preferably be in the form of preference or debenture capital, with easy terms for redemption. There should be Government representation on the Dictorate proportionate to its monetary interest.

Training of supervisors.

Q. 44.—I think the lack of primary education is a great hindrance to the training of native labourers to become overseers and foremen and heads of departments in factories There is no lack of intelligence : it is trained intelligence which is wanting. In the factories I have been connected with all such posts have been filled by skilled workmen from Home, many of whom could be replaced by natives if primary education was more common. I may refer here to the system of sending natives of India to England with scholarships to study industries with a view to becoming practical experts. I think such expenditure is mostly wasted—say 95 per cent of it—because the wrong class of man is sent and advantage is not taken of opportunities to obtain similar training in India. It is no use trying to make an industrial expert in operations in which skill of hand and eye, an instinct for the feel and movement of things, is essential, out of a man who despises manual labour. Such a man loafs around the British factory to which he is attached with a pencil in one hand and a notebook in the other. A Japanese student in the same factory will be seen stripped to his shirt taking his full share of all the operations. He is learning, the other is merely observing. Such men are sent Home to learn paper-making or pulp-making while there are perfectly well-equipped factories in India where they could at least be given a thorough preliminary test before being sent Home to find out if Home experience was likely to be of any use to them. Industrial experts can only be produced from the class which not only does not despise manual training but is proud of it and, if an effort was made to train the intelligence of such men up to the standard required, they would probably be greatly benefited by a finishing course at Home.

Patent Laws.

The Patent Laws should be more directly assimilated to those of England, in particular as regards what is, I think, called the Patents Convention, under which all countries joining it agree to register, if desired, patents originally registered in one of them if application is made within one year of the date of original registration. It seems an extraordinary anomaly that India should be outside such an obviously useful Convention of which England is the mainstay.

NOTE.—*Witness did not give Oral Evidence.*

AMRITSAR.

WITNESS No. 386.

KHAN BAHADUR SHAIKH GULAM SADIK, *Carpet Manufacturer, Amritsar.*

WRITTEN EVIDENCE.

Pioneer factories.

There are no pioneer factories in the Punjab; in my opinion it would be advantageous if the pioneer factories are opened by the Government for spinning woollen yarns and tanning skins and hides. It is most desirable and important that these model or pioneer factories should be started on as moderate a scale as possible. Materials for both of these two industries are plentiful in the Punjab, all of which are exported to Europe in raw state. I shall write about these later on.

Consulting engineers.

There is no consulting engineer here to help people desirous of opening new factories for manufacturing articles which are imported from outside. The appointment of one by the Government will be hailed by the people of the Province. There will be no harm if he be permitted to make arrangements to purchase machineries for any private person if he so desires. Of course it must be part of his duties to give the addresses of all the manufacturers of the machineries, and full particulars about them and everything required by the purchaser.

Industrial schools.

A few years ago, during the time of Sir Louis Dane, the then Lieutenant-Governor, an Industrial Conference was appointed by the Government, and I had the honour of being one of its members and thereby had the occasion to visit about five or six existing Government Industrial Schools in different districts in company with the then Director of Industries of the Punjab and two other gentlemen. My opinion was that those schools were quite useless and the money spent on them was wasted. Excepting that the boys were educated up to the middle standard, the industries taught were carpentry and smithy of different kinds of an ordinary type, which could be learnt anywhere *gratis*. If these schools are to be maintained the boys should be taught highly skilled workmanship in these and other crafts which they cannot learn anywhere else. New crafts should be introduced and the teachers should be brought from other countries for the existing and the new crafts. Small handworked machines should also be introduced to save labour, so that when the boys leave the school, they may come out as highly skilled artisans. I have seen that boys of these schools after finishing the course seek other employments. Of late an improvement has been made by increasing the school hours on craft's side and limiting the education to elementary standard. Excepting railway workshops we have very few other places where boys can be sent as apprentices, but I suppose these workshops have enough apprentices for their own future work.

Half-time schools.

I have no experience of day schools for short-time employees, but I know something of night schools. I have found that night schools are popular with workmen and wherever opened, sufficient number of men come forward to receive education.

It is very good to train supervisors and managers, but so far as the Punjab is concerned, I think there is no necessity of opening classes for these, as there is no demand for them at present.

There exists no organisation for development of industries in the Province. I have been advocating the formation of some sort of organisation for introducing new industries since many years. I am a carpet maker by profession and throughout my life I have been connected with the manufacture in one way or the other. At present I have a carpet factory in Amritsar and three branch factories in the out-stations. More than six years ago I also took up sericulture with a desire to promote the same. I have also a small filature in Amritsar. So my experience, whatever it is, relates to the industries in which everything is done by hands only.

It is my belief, which is based on the small experience which I possess, that we cannot revive old industries which are worked by hands. Manual labour cannot compete with the machinery. Therefore any attempt to manufacture by hands, the things which can be made by machinery, shall end in a failure. Some two years back I wrote an article on the development of industries which was published in the *Tribune* of Lahore in its issue of September 1915. I have got it reprinted and send now 10 copies * of the same along with this paper. It may not be out of place to mention here that in that article I have given in detail my reasons as to why we should introduce only such new industries which

* Not printed.

can be worked with the machinery alone, and I solicit the favour of the article being perused. The time of industries, which are run by manual labour alone, is gone for ever. It is useless to attempt to revive them. We have still a few cottage industries left. The workmen employed in them are very poor—poor not because they have no capital and cannot improve their lot, but because there is not a great demand for articles made by them, and so they continue to work on small wages.

I may be permitted to write here that the Punjabees as a rule are enterprising people. They are always on the lookout for some new business, whether trade or industry. If they are assured that it is profitable, they are ready to undertake it. Years ago numerous banks and other corporated companies were started in the Punjab. Unfortunately with the exception of a few, all of them were smashed recently. They are still known to the public, but with the addition of " in liquidation " to their names. As all this ruin was caused through the inexperience here and dishonesty there of the managers and the directors of these companies, every new enterprise met with a check. So much so that it is nearly impossible now for any private person to come forward and dare to start a new concern, because the public will not trust anybody now.

Besides this, those who are desirous of starting new industries do not know what and how to do it and from whom to get any information about them. Then in starting factories for new industries, one must be prepared to incur initial and incidental expenses which cannot be avoided which will necessarily be very large in proportion to the capital outlay in an industrially backward country like India. Supposing a man does so and he succeeds in some industry, there spring up against him the competitors, who take advantage from the experience of the first man which he has obtained by spending money. It is therefore high time that the Government may be pleased to take upon themselves the task of showing and teaching the people what and how to do in the matter of introducing new industries.

Official organisation.

For the future development of industries in the Punjab my proposal is that a Board of Industries be appointed with the Director of Industries as its President. The Director of Industries may be an Indian Civil Service man, but there must be a wholetime Secretary who must be thoroughly acquainted with business and industries and must have up-to-date information about commerce and industries of other countries. The Board must be provided with funds. Money should be allotted for recurring charges, such as salaries, travelling expenses of the Secretary and of the establishment. The main duty of the Director should be to preside over the deliberations of the Board and see that the money is not wasted and that the Board is not going to be extravagant on its expenditure side. However a certain sum should be sanctioned which the Board can spend for the sake of making enquiries as to which industries may be introduced and what pioneer factories are to be opened. As our aim is to introduce quite new different industries, the Board shall have to bring experts from other countries. All these expenses must be borne by the Board. There must be a separate fund given to the Board for the sake of starting factories which the Board decides to open. The number of members of the Board should not be more than nine, and these should be selected from amongst the manufacturers and merchants of the Province. The Board must not take in hand more than two industries at a time and when these are a perfect success, two more may be taken up in hand. After the Board has started one or two factories and they are working profitably, they may be sold to the highest bidder by public auction. The actual costs of the factory should also be disclosed to those who bid for the same.

If any one requests the Board to erect or start a similar factory for him, the same must be done, but he should be charged a commission of 5 or 6 per cent on the actual cost of the same. My suggestion to sell the first factory of a newly introduced industry to the highest bidder, is to avoid showing any favour to anybody in making it over to him. I am quite sure that once a factory is proved to work profitably, many similar factories shall be opened by the people.

I have written above and repeat it here, that it is most important, that in the beginning only such industries should be introduced, the factories for which can be run with a moderate capital. And if such factories are established which could be worked with small capital, say one-quarter, half, three-quarters, and one lakh, I think hundreds of similar factories shall spring up at different places.

The Board must send a report of their working to the Government half-yearly and before the beginning of each year must send their proposals for what they are going to do during the next year. The factories for spinning woollen yarns, tanning, boot-making, soap-making, enamel-making and for the manufacture of toys, buttons, needles, nibs, penholders, etc., can be opened and worked profitably. There are hundreds of other

small things, for all of which we depend on other countries. I must write here that I have no experience of machineries and cannot say anything about them.

Under the present circumstances when India has made no progress industrially and even the Bombay Presidency, leaving its cotton industry alone, has done nothing to introduce other modern industries in the country, I think there is no necessity of having an Imperial Department of Industries. For the present each Province must begin and work separately according to the commercial ability and the working capacity of its people.

ORAL EVIDENCE, 20TH DECEMBER 1917.

Hon'ble Sir R. N. Mookerjee.—*Q.*—You think there is no necessity for opening classes for supervisors and managers in the Punjab ?—*A.*—No, there is no necessity. We have got no industries, and don't require managers for the present.

Q.—How will industries begin without manager ?—*A.*—When the industries begin we will have experts and they will manage it. It is quite useless for the present to have classes to show them the work of management of things which do not exist at all.

Q.—Don't you think both should proceed side by side ?—*A.*—Quite so.

Q.—If you want to develop industries, you must have men to supervise ?—*A.*—My proposal is that, until Government comes forward, in the way I have proposed, we cannot expect that the people will come forward and develop industries. In my opinion, if we leave that question to the public alone, it will be quite impossible. My idea is that our old industries are dead, and it is quite impossible to revive them. If we do, we must see commercially what would be the effect of that. There is no demand for our hand-made things. At present everything manufactured by machinery is cheaper and nice-looking. People have got the habit of using those things. They don't care about the durability of things, but that they must be nice-looking, and at the same time cheaper, so that they can suit the purse of everybody.

Q.—Are your observations meant for the whole of India ?—*A.*—I have not such experience that I can talk about the whole of India. I can only talk about the Punjab.

Q.—Is the Punjab specially bad that they won't look to durability ?—*A.*—The Punjab is in no way behind other provinces, except that there are few technical and other industries.

Q.—Do you think the way you suggest that Government should help every industry is feasible ?—*A.*—Quite feasible, if Government really desires to help these industries. Two years ago I wrote an article suggesting that that was the only way of developing industries in India. It is very difficult for us in the beginning to have factories which cost lakhs upon lakhs of rupees.

Q.—I see you are opposed to having an Imperial Department of Industries ?—*A.*—What would be the cost of that department ? I had purposely left that question alone, because if I recommended that, it will bring the whole machinery into existence before there are any industries. If I suggested that Government must have an Imperial Department, it would cost four or five thousand rupees monthly. If that money was spent monthly to help the opening of new factories as proposed by me, we should do much better. Of course when there are factories of that kind, then you can have one Imperial Department for the whole of India, and Directors for different provinces.

Sir D. J. Tata.—*Q.*—You say that industrial schools are quite useless, and the money spent on them is wasted. Why do you say that they are useless ?—*A.*—The last time I had occasion to go round with the Director of Industries and visit these schools, I saw that nothing was taught there, except that which was taught everywhere. What is the use of having these schools when you can teach boys the same things anywhere *gratis*.

Q.—You must admit that the teaching of blacksmith's work or carpentry in the ordinary way is not likely to be very useful. In technical schools boys are taught the use of special tools, and improved methods. The efficiency of the tools used by the village carpenter or blacksmith is nowhere near that of the tools introduced by the schools. Does not that make some difference ?—*A.*—In the first place, the boys who are taught in these schools are city boys, a very few villagers' sons and sons of village carpenters. They are only city boys. There is a vast difference between the work done by village carpenters and city carpenters. City carpenters can do everything. They can make every kind of wood-work for buildings, etc., while the village carpenter only repairs carts with big wheels and nothing else : so whatever is taught in the cities, the same is taught in these schools. Whenever a big building is under construction the carpenters who work there take three or four boys as apprentices. In the beginning they only give them tools to sharpen. After some time they give them something to handle. After two or three years they learn enough to help their

masters. The latter get eight annas from the owner of the house as the wages of the boys who after 2 or 3 years are paid a portion of what they earn. In this way they learn everything without any trouble or difficulty. I have seen the same thing being taught in those schools I visited. I have never seen in any of these schools that any machinery was used, or any improved tools. I told Mr. Hamilton at the time that it was waste of money.

Q.—Then you don't believe in improved tools turning out better work ?—*A.*—There are no improvements so far as I have seen.

Q.—Surely, there is a difference between the European tools brought into these schools, and the country-made tools ?—*A.*—No tools are manufactured here.

Q.—Those are European tools brought into this country, the use of which these boys are taught ; and with those tools do they not do much better work ?—*A.*—I have not seen that. What is the use of teaching them when they can do the same things you can find everywhere. If you are going to have those schools, have them on an improved system, so that the boys who go to these schools are taught what they cannot learn in cities.

Q.—You say "I have no experience of day schools for short-time employees, but I know something of night schools." You have no experience, because there are no day schools, or because you have not visited any ?—*A.*—What do you mean by day schools ? There are no schools for short-time employees.

Q.—But you believe in the necessity of day schools, that if they were introduced for short-time workers, it would be to the advantage of those workers ?—*A.*—Yes.

Q. You say your night schools are popular with your workmen ? Do they get time to attend ?—*A.*—At night ; they leave work at 5 or 6, and go very gladly.

Q.—What do they learn ?—*A.*—Reading, writing and arithmetic.

Q.—No sort of technical knowledge ?—*A.*—No, just reading and writing.

Q.—The reason why you say you cannot revive old industries is simply because of the competition. Machine-made goods can be made so cheaply that hand-made goods cannot compete with them ?—*A.*—Yes.

Q.—But aren't there some things which cannot be made by hand, and which can be made by machinery ?—*A.*—No ; I have given an instance to you of carpet manufacturing. That work is thriving ; at the same time, we don't find any market in India for those carpets.

Q.—There are certain carpets which can only be made by hand, and which cannot be made by machinery ?—*A.*—Our carpets are never made by machinery.

Q.—Except those, you say there is no scope for hand-made industries ?—*A.*—No.

Q.—Amongst the factories you recommend is one for enamel-making. What do you mean ? Enamel ware or artistic enamels ?—*A.*—Enamel ware. There are several things we import from foreign countries. These small things we must attempt to manufacture here. I don't recommend big factories where the capital is 25, 50 or 60 lakhs. We must not have that for the present ; we must follow Japan.

Hon'ble Sir Fazulbhoy Currimbhoy—*Q.*—You say you are a hide merchant ?—*A.*—No, I have corrected that. I am a carpet merchant.

Q.—You are not dealing in any way in hides ?—*A.*—No.

Q.—Where do you get the patterns of your carpets from ? Do you change them very often ?—*A.*—I change them every month. We get the designs from America. I deal solely with America ; they have their own designs and their own colours.

Q.—On account of the war is the trade very slack at present ?—*A.*—No, it has not affected us up to now.

Q.—If you follow their own designs and colours, can you get the aniline dyes to get the American light colours ?—*A.*—There is no difference between aniline and imported colours because formerly we had indigenous dyes here, but since the introduction of German colours the dyers forgot all about those Indian colours. We have got a very big dye house and have again revived indigenous dyes, in consequence of not being able to get those German dyes.

Q.—Have you got any expert in dyes ?—*A.*—I am myself an expert in dyeing.

Q.—Do you think the Indian colours will be cheaper than aniline dyes?—*A.*—I went to Simla and got every leaf and bark and everything. I tried, but it is very difficult to get all the colours.

Q.—You don't think you will be able to make it cheaper?—*A.*—It is not the question of cheapness, but the question is whether we have got enough colours here. For the present we use only one or two, *viz.*, pomegranate for yellow and cochineal for red and walnut bark for black, but it is not so black as we desire. Although we are using indigenous dye stuffs, we are still looking after those imported dye stuffs for which we have to pay Rs. 30 instead of Re. 1.

Q.—Will you tell us how much more your indigenous colours cost you, as compared with other colours; the original price?—*A.*—I think the cost was the same. The pre-war price of the imported and the Indian dyes were the same.

Q.—I suppose German colours were much cheaper?—*A.*—No, the good in them was that they sent hundreds of new shades every month. They have got experts. We know how to combine the colours and produce different shades by mixing the different colours. We receive designs coloured and find out that there are 20 colours in that. We must make the colours exactly like samples, so we have to produce a combination. What the Germans did was to send their own combinations, hundreds of shades, so the dyers had no necessity for combining these colours. They merely had to take the colours and put them into a basin and use them.

Q.—Are you directly trading with America, or have you got a middleman?—*A.*—Yes, directly.

Q.—What do you think is the average export of carpets from the Punjab?—*A.*—Amritsar exports 7 or 8 lakhs of rupees a year to America.

Q.—Do you think there is any chance of developing this industry still further?—*A.*—There is.

Q.—You make a reference to an Industrial Conference. What was the idea of Government in having this Industrial Conference?—*A.*—I heard nothing as to what was decided about that.

Q.—What was the object of this Conference?—*A.*—To improve industrial education, but nothing came out. We sent our report, but nothing was done. It was thrown into the dead letter box.

Q.—If you have no objection, will you tell us what you think, and recommeud for the industrial education of the Province?—*A.*—I gave my opinion. I don't know about the result. We never gathered together again. After we visited these places, we never sat together, and were never consulted about the report. I personally sent a report about these industrial schools, but I don't know exactly what Mr. Hamilton reported, or what Government did. Nobody asked us, and we kept quiet.

Q.—Have you any suggestions to make regarding the industrial schools in your province?—*A.*—The schools are the same as what I have suggested.

Q.—You are not in favour of industrial schools at all?—*A.*—What for? You can improve them in a hundred ways. You can introduce hand-machines. There are hundreds of things which our carpenters cannot make, hundreds of things which our ironsmiths cannot make. They make them in a clumsy way. There is vast room for improvement, but they never do anything to improve.

Q.—You say, "it is my belief which is based on the small experience which I possess that we cannot revive old industries which are worked by hand. Manual labour cannot compete with the machinery." In certain things machinery never competes with manual labour.—*A.*—Yes, but carpets cannot be made by machinery; then we have no demand in India for real good carpets. We must have Mirzapore carpets which are selling at Rs. 2 and Rs. 2-8-0 a yard. I manufacture about 700 or 800 square yards per month, but I never get a buyer to buy nice carpets for Rs. 1,000. Everybody wants carpets for Rs. 40 or Rs. 50. If we are poor we must make things which can be bought by poor buyers.

Q.—Have you got any opinion about cottage industries?—*A.*—There are no cottage industries, so far as I know, in the Punjab.

Q.—Don't you think that the establishment of cottage industries would be very useful. People in their own small huts could do hand work?—*A.*—I have no faith in that.

Q.—What do the cultivators do after the season is over?—*A.*—I don't think they have a long time of vacation between harvest and harvest and crop and crop.

Q.—You think there is not much time that could be devoted to cottage industries?—*A.*—There may be but we must introduce things that are saleable. There is no such thing that you may introduce and then find a good demand for them, for which people are willing to pay good prices.

Q.—You say that you don't want an Imperial Department?—*A.*—Not for the present.

Q.—For big industries like ship-building, an Imperial Department is necessary?—*A.*—If you have any intentions of that kind, certainly. What I meant was for the small industries it is useless to have an Imperial Department.

Q.—You say, "if any one requests the Board to erect or start a similar factory for him, the same must be done, but he should be charged a commission of 5 or 6 per cent on the actual cost of the same." What do you mean by 5 or 6 per cent? Is that in addition to the cost?—*A.*—Yes. Suppose you have a new factory and it works well and gives a profit. Then you make it over to somebody, but if anyone wants you to erect a new factory, you may get 5 or 6 per cent commission for the trouble.

Q.—But the charge for the trouble will be included in the cost?—*A.*—For their services this 5 or 6 per cent may be added.

Sir F. H. Stewart.—*Q.*—You say you are a contractor as well as a carpet manufacturer?—*A.*—No, that is a mistake. I am a carpet manufacturer. For the past 5 or 6 years I have also had a small silk filature, which is running in Amritsar.

Q.—Is it progressing satisfactorily?—*A.*—It should be progressing, but the difficulty is that the people have not taken to it as yet. It is now some 6 or 7 years ago that a Settlement Officer at Gurdaspur got a few ounces of French seed from Kashmir and gave it to the people to be reared I have two small branch factories in that district. So my people reared the silk worms and delivered the cocoons to that gentleman. Next year I wrote to him, that if Government are not willing to do that work, I am willing to spend money and do it. The gentleman replied that Government were not willing to do that, but were willing to help me. For the first 4 or 5 years I lost over Rs. 5,000, but in consequence of the war, prices have gone up, and I am recouping that loss, but there is a difficulty in introducing new things. I have now got competitors. At the same timê I have to recoup my losses. That is the difficulty. The people of this province are willing to do anything if they see other people do it. Just as they did with the banks. They lost 2 crores of rupees putting confidence in men who had just left their colleges without any experience of business. They tried to play with the money of other people. I am one of those men who are willing to introduce new factories, but if I spend 10,000 or 12,000 rupees, other men will come and compete with me and try to oust me. The carpet industry was introduced in Amritsar by my brother and myself. He and I worked together, and introduced it. Nobody knew anything about it in Amritsar. After a few years other people came forward and tried to oust us from this work, instead of being grateful to us that we had introduced a new work into the city which gives a livelihood to more than 10,000 persons. They tried to oust us from this work, but we stood our ground.

Sir D. J. Tata.—Do you only make raw silk or try to weave it?—*A.*—No, just rearing and reeling.

Q.—In your carpets have you got any silk at all?—*A.*—No, it is not required at all. We have carpets of high grade wool, but not silk.

Sir F. H. Stewart.—Are all you carpets factory-made?—*A.*—Hand-made, all made in our factory.

Q.—How are the weavers paid; a daily wage, or piece-work?—*A.*—We give them so much per hundred stitches.

Q.—How much on the average can they earn in the month?—*A.*—The master weavers get Rs. 40, sometimes Rs. 50, sometimes Rs. 30. We have got looms, and with each master weaver we have an account, and give him so much per yard for different qualities. We have about 10 different qualities. The wages are paid at so much per 1,000 stitches, so the wages for a carpet are calculated according to the number of stitches it contains.

Q.—Does the master weaver supply the ordinary weavers?—*A.*—We supply the weavers and advance the men and everything; but only for the sake of keeping the accounts clear, we make him master weaver.

Q.—How much do ordinary weavers earn in a month?—*A.*—From Rs. 8, 9, 10 to 15 a month. Boys earn Rs. 7, 8 and 9.

Q.—With regard to the vegetable dyes you are using, are they fast?—*A.*—Yes, but there are different kinds of fastness. In America they have begun to wash carpets, because

the washing gives a kind of lustre. I know that process, but indigenous dye stuffs don't stand that washing, unless they are dyed in a particular way which we know because in that washing they use alkalies.

Q.—Do you know anything about the dyeing school at Lahore which has recently been started ?—*A.*—No.

Q.—Your opinion of Industrial Schools generally is a poor one ?—*A.*—Very poor.

Q.—Have you kept in touch with them for the last few years ?—*A.*—I am Municipal Commissioner in this place, and we have got an artisan class under us.

Q.—Are you familiar with the work of the School of Art in Lahore ?—*A.*—I have seen that once. It is the only School of Art. I go now and then. It is not so useless.

Q.—And the Railway Technical School at Lahore ?—*A.*—I know nothing about that.

Q.—Or the Engineering College at Rasul ?—*A.*—No.

Q.—With regard to cottage industries, you say that there are some left still, but your idea is that they are doomed to disappear ?—*A.*—They are bound to disappear.

Q.—In the meantime, don't you wish to do all you can to preserve them ?—*A.*—What is the benefit ?—The difficulty with us is that we won't get a market for them.

Q.—You don't think that the Department of Industries which you recommend could do a great deal to help them ?—*A.*—I cannot say whether they help them or not; but I have not seen any result up to this time. They may do if they like.

Q.—With reference to your Department of Industries, you say "The Director of Industries may be an Indian Civil Service man." Do you mean he should be, he ought to be ?—*A.*—It is not necessary, he may be. I mean the best man. I want to have a high official at the top, if Government is going to spend any money.

Q.—Otherwise you think Gevernment won't be responsive enough ?—*A.*—Yes.

Q.—Do you think the Director should have the power of veto on the Board as regards expenditure of money ?—*A.*—How can he veto ? He will be one of them. I have not kept him separate. If you are going to appoint a Board, the Director of Industries should be one of them.

Q.—You don't want to give him special powers ? You say he should see the money is not wasted.—*A.*—When there is a man on the spot at their deliberations, he can consult with them, give them advice. If they outvote him he can go to Government. There must be some check.

Q.—About your factory you say, "If any one requests the Board to erect or start a similar factory for him, the same must be done, but he should be charged a commission of 5 or 6 per cent on the actual cost of same." What do you mean by this ?—*A.*—Suppose it costs Rs. 50,000. You have to make it over to one man. To whom will you show that favour ; therefore I have written, when putting to auction they must be told that it has cost so many thousand rupees, but should be given to the highest bidder.

Q.—You want a reserve price fixed ?—*A.*—No reserve. I don't want to show favour to any one. If anybody asks you to erect a similar factory for him, for future factories you must charge a commission of 5 or 6 per cent.

Q.—With reference to the Imperial Department, you are afraid of the expense ?—*A.*—Yes.

Q.—But don't you think there would be much greater expenditure if all the different provinces had separate provincial Boards, and that without any central control there would be overlapping of work, and wastage of time as well as of money ?—*A.*—I don't think there will by any loss because the beginning is to be in small things. My intention in putting forward this proposal is that I have seen that Punjabis generally look out for new business. If you show them something new, you are quite sure to see hundreds of things of the same kind will come into existence.

Mr. C. E. Low.—*Q.*—You say in your evidence regarding industrial schools that "small handworked machines should also be introduced to save labour, so that when the boys leave the school, they may come out as highly skilled artisans." It is not very much good teaching boys the use of improved implements of that sort, unless they are put in the way of getting those implements when they leave school ?—*A.*—Yes.

Q.—How would you arrange for that ?—*A.*—If you have improved machines of that kind ? In the first place, those machines which can be used by hand will not be so expensive

If the man knows that it is beneficial and turns out good things, he will buy a similar machine and use it himself.

Q.—Do you think he can get the money to do it?—*A.*—Yes, they are well off. They get Rs. 1-4-0 and Rs. 1-6-0 a day in the city.

Q.—Take the case of a mortising machine, a machine for making holes for spokes in the nave of a wheel. Each hole takes him 20 minutes, if he cuts with his hand. If he puts it in a mortising machine, he can make the hole in ½ a minute. Do you think he would spend Rs. 120 in purchasing a machine of that sort?—*A.*—Certainly. It is not necessary that each man who leaves school should get a machine. They will combine together. One might be well-to-do. He may start a small factory.

Q.—We have received very serious complaints from Mr. Heath of the School of Art in Lahore that the boys on leaving school were not able to purchase the machinery which they had been taught how to use in the School of Art?—*A.*—It is quite possible, his experience may be so, but at the same time I think that those machines must be very costly. If they cost Rs. 50 or Rs. 60, or Rs. 100, it would be very easy for them.

Q.—You don't think it is necessary to have any special system of loans to these students to help them to buy improved tools?—*A.*—It is quite unnecesssary. I am against Government guaranteeing dividends; how can Government do that?

Q.—You say, speaking of half-time schools "I have found that night schools are popular with workmen, and wherever opened, a sufficient number of men come forward to receive education." Have you night schools here?—*A.*—Yes, we have got a few here.

Q.—Who are they managed by; Government or the Municipality?—*A.*—No, the Municipal Committee has not got any night schools. There are some private persons who have joined together and opened a night school.

Q.—What class of men come?—*A.*—Every kind of workmen.

Q.—Do the artisans who work in the bazar come?—*A.*—Yes, workers who are in the city, shop-keepers: embroiderers, but carpenters don't come.

Q.—The evidence we have had all through India was to the effect that a man who works hard with his hands is too tired and sleepy to benefit by a night school.—*A.*—I have seen these people walking in the city for hours and hours. I don't think they go to sleep.

Q.—We had it with reference to men employed on laborious trades like engineering?—*A.*—That may be.

Q.—With reference to people who do lighter work, do they come?—*A.*—Yes.

Q.—In your silk culture arrangements, do you give out seed to the cultivators.—*A.*—Yes, I import from France every year and give it to people. Generally cultivators don't come forward. There are weavers who are cultivators also.

Q.—Can those people get mulberry leaves?—*A.*—Yes, I buy from the District Board. I have got 5 years' lease. I supply them with mulberry leaves free of charge.

Q.—Do many of those people live in one place; or are they scattered?—*A.*—They generally reside in villages. Sometimes we ask them to go from one place to another, 10 or 20 miles. I get mulberry leaves from the Canal Department, and send people there to get mulberry leaves. The whole work is done in 40 days. Sometimes they get people's houses on rent and live there; sometimes they build small huts.

Q.—And the work takes them 40 days to rear a crop?—*A.*—Yes.

Q.—Then you purchase the cocoons?—*A.*—Yes, and reel them.

Q.—What are the chief difficulties you have experienced: were you troubled with disease?—*A.*—No, never.

Q.—This seed that comes out. from France is guaranteed free of disease?—*A.*—It has proved to be so for the last 7 years It has not got any disease at all The difficulty is that people don't take so much to this new work. The Agricultural Department have tried their best; have taken in hand several districts. I had applied to the Director of Industries to give me two more districts, but he did not approve He said, he would see what I was doing in Gurdaspur. The Agricultural Department did try to increase the number of rearers. Even the States have taken to this now.

Q.—Is there any caste objection on the part of people of high caste?—*A.*—I have not seen that. There may be. Hindus won't take to it. Sikhs take to it. Millions of these insects are killed. Those against killing insects don't like that.

Q.—The low castes ?—*A.*—They don't do it.

Q.—The people who do it have not always got land of their own ?—*A.*—Sometimes they have their own mulberry trees, and we pay them for the price of those leaves, if they don't get them from the roadside avenues.

Q.—Supposing a man rears a crop in 40 days, how much does he make in his 40 days' work ?—*A.*—I think Rs. 25.

Q.—Of course his worms are liable to damage, not from disease but from wasps and birds ?—*A.*—They take care of that. The only drawback with this district is that everybody desires to get more of the seed, and the difficulty is that they cannot manage that. The consequence of that is the output of the cocoons is less than what it ought to be.

Q.—There is a demand for more seed than there is a supply ?—*A.*—They ask more seed than they can manage, because there must be a large space. Each ounce of seed must have 300 sq. feet of space. They have not got so much space. In 300 feet they put 3 or 4 ounces.

Q.—Have you got a power-reeling plant ?—*A.*—Yes, in my dye house I dye with steam. I have got a big boiler. From that I take the steam for working this also, but the churkhees are worked by boys.

Q.—Do you make twist silk or loose ?—*A.*—Loose.

Q.—You sell to the French houses ?—*A.*—Generally speaking, it is sold in Calcutta.

Q.—Is it exported or used in Calcutta ?—*A.*—I think it is used in Calcutta by local weavers.

Hon'ble Mr. H. J. Maynard.—Q.—You say that we cannot revive old industries which are worked by hand ?—*A.*—Yes.

Q.—You were not thinking of things like pottery, when you said that ?—*A.*—What kind of pottery do you mean ?

Q.—Any kind, either ordinary or art pottery.—*A.*—If you want the pottery that the poorer people use, then there is no necessity of improvement. If you are going to make it just like the imported, that is a new thing. I won't call it an old industry. If you are going to have an industry exactly like what we have, then of course I say it is quite useless to spend any money on that.

Q.—If you were going to glaze the pottery ?—*A.*—It is useless ; they are not durable. If you glaze it, what is the use when it has not got a good foundation ; it will break at any moment.

Q.—Do you mean to refer also to art industries ?—*A.*—That is quite a different thing. Everything beautiful and costly can be made by hand. The difficulty is that our Indians have no taste for these things. Whatever things are made now, which are costly, must be exported to foreign countries. If there is any buyer, it is there. My experience has been that several times people have come to us for carpet samples to take to Native States. I have said, I don't require such help, because I have got sufficient work. I give them samples and they come back and say the Raja would not pay the price.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—You say you are against the Government guaranteeing dividends ?.—*A.*—Yes.

Q.—Supposing Government wants to help to establish an industrial bank for the purpose of starting and financing new industries, don't you think, if Government guaranteed interest, the capital for such an industrial bank would be easily subscribed ?—*A.*—It will be Government providing funds for the bank.

Q.—The funds will be provided by the public ?—*A.*—There is no harm. The idea I had of industries was of starting new industries.

Q.—Don't you think Government help should be given to a industry that is new and useful to the country ?—*A.*—The question is who will start that ; who will manage that. I am totally opposed to Government giving help to industries by guaranteeing dividends.

Q.—Suppose there were works like the Tata Steel Works ?—*A.*—Yes, especially if they show such large percentage of profits. If Government is quite sure, from making enquiries then Government must help. It is the duty of Government.

Hon'ble Mr. H. J. Maynard.—Have you got any sort of Indian Chamber of Commerce in Amritsar ?—*A.*—No, I am a member of the Punjab Chamber of Commerce. We have got a small committee here.

WITNESS No. 387.

MR. JOHN ASHFORD, M.I.M.E., *Superintendent, Central Workshops Division, Amritsar.*

WRITTEN EVIDENCE.

Note on Industrial Development.

WHEN approaching the question of industrial development of a country in which industrial pursuits have but a small part as India, it is advisable to consider the history of industrial development of some of the great industrial centres. A knowledge of the factors which have produced such development may help towards the formation of a policy of a suitable nature. We find that whereas natural conditions, such as the presence of raw material, may in some cases be an important factor, yet more often it is due to the inventive ability and enterprise of some individual. An industry having been established in this way grows by the enterprise of those men who have been associated with the originator, and who may launch out upon similar or related enterprises of their own. Historical.

As a native of Birmingham I am in a position to speak of the industrial development of that town particularly, as well as from information handed down to me by members of my family. It is a well-known historic fact that James Watt became associated with Matthew Boulton when they established their engine-building factory at Soho. Boulton had a small manufactory where he produced coins and other articles and that place is known to the present day as "the Mint." At the time when James Watt introduced the steam-engine, machinery for the manufacture of such engines was practically non-existant. He was faced at every turn with difficulties, and his perseverence and skill as an Engineer were shown even more in the machinery and appliances he produced to manufacture his engines than in the engines themselves. He required large castings and forgings such as at that time had not been produced, and he had to devise means for producing and finishing these things suitably for his work, also he had to train men to do the work. His task was colossal, yet his name is rarely associated with that part of his work.

Finding Watt so able a mechanician, Boulton sought his aid in connection with the other branch of his work, and Watt devised plant for rolling metal, pressing it and stamping it to produce the coins and other articles which Boulton manufactured. At that time Birmingham was scarcely more than a village with little in the way of natural features qualifying it to become an industrial centre. There was, however, one natural feature ultimately developed which assisted in the growth of the place, namely, the Staffordshire coalfield. Although Birmingham actually lay outside the coalfield area, it is most interesting to observe that at the present day, within a mile radius of the old Mint, there are thousands of workshops producing a multiplicity of types of metal goods all using methods of manufacture similar to those developed by Watt. Workmen employed both in the engine works and in the Mint saw openings for their energy and started small shops of their own, and the workshop system that has grown from this initial start is worthy of attention. These workshops for the most part were originally attached to the houses in which the workmen lived and so were essentially cottage workshops.

In many cases these workshops were too small to embody the whole work of producing some particular articles and so this metal trade became divided into many sub-branches. We find separate workshops for work of the following nature :—

(*a*) Pattern-making.
(*b*) Brass-casting.
(*c*) Metal-rolling.
(*d*) Wire-drawing.
(*e*) Tube-making.
(*f*) Tool-forging.
(*g*) Die-sinking.
(*h*) Stamping and piercing.
(*i*) Soldering and brazing.
(*j*) Engraving.
(*k*) Chasing and embossing.
(*l*) Ornamental engine-turning.
(*m*) Polishing.
(*n*) Lacquering.
(*o*) Japanning.
(*p*) Tinning.
(*q*) Galvanising.
(*r*) Electro-plating.
(*s*) Card-board box-making and others.

The various workers in these separate shops may not produce any finished article and while they themselves are in an independent position and work when they like, they take work as outworkers from mastermen who are really the business-organisers that make this system possible. These business-organisers may call themselves manufacturers, as for instance brass founders, manufacturing ironmongers, gilt-toy makers, etc. They will buy the metal mixed and rolled in readiness for work and of a quality suitable in colour, hardness, or ductility for what they want. They will have prepared by these outworkers designs and patterns, have castings made or the dies fashioned, have their materials stamped and pressed in their dies, soldered together to make up the article, polished, gilt or lacquered, and finally sewn upon cards and placed in boxes or ornamental cases in readiness for sale. These men, although calling themselves manufacturers, are rather factors or warehousemen, their work chiefly consisting in passing their own material from one to another of the outworkers until it reaches the finished state in readiness to pass into their warehouses ready on sale.

In some cases, where power and machinery are required, buildings have been erected with a multiplicity of rooms and fitted with driving shafting and engines. These rooms are then hired out to individual people as workshops with power, and the tenants carry out their own branch of manufacturing on an independent basis.

This system of working that I have endeavoured to explain is not a fancy system or one relegated to the past. On the contrary it is in active operation in England at the present day.

The metal-working trades that have developed in what might be called the "Watt" country include the manufacture of all kinds of brass and copper goods, such as brass foundry work, lamps, gas fittings, electrical fittings, buttons, toys, furniture fittings, hardware, sheet metal goods, guns, wire goods, needles and pins, jewellery, umbrellas, carriage fittings, nails, screw, and other articles too numerous to mention. There are also great factories for Engineering, Ironfounding, Machine-tool-making, Tube-making, etc. The development of all these trades is traceable chiefly to the work of Jame Watt.

Thirty years ago Coventry was a country town with but little in the way of industry, having only the remnants of two moribund trades, namely, ribbon-weaving and watch making. A young man of that city, James Starley by name, invented what was then called the "Spider Wheel" which he applied to the bicycle, and with his cousin J. K. Starley he established a small business for the manufacture of bicycles embodying his invention. He did not live long to see the results of his work, and when he died at the age of 26 the business remained in the hands of his cousin. As bicycles began to find favour with the public, workmen engaged with the original firm branched off and started shops of their own and so the cycle industry was founded and became the premier industry of that city. The original concern is still in existence and is known as the Rover Cycle Company. That industry was originated by the genius of James Starley and upon it Coventry has grown to be a great industrial city. On that beginning as a foundation, its cycle trade grew and upon that again the motor-car industry grew, and as offshoots we find factories for the manufacture of steel balls, chains, etc., and a great variety of machine-tool manufacturing concerns, notably the great firm of Alfred Herbert, Limited. The writer of this note was in touch with the trades of Coventry from their early beginnings and has watched their development with keen interest.

The cotton trade of Lancashire did not begin with a natural supply of cotton, and it is generally stated that the development of its staple trade is due to the fact that its humid atmosphere, being favourable for cotton-spinning, was the natural feature leading to the development of that industry. Such was not directly the case. Certainly its wet climate was an indirect cause, because Lancashire farmers found great difficulty in making a living out of their farming from the unfavourable climate, and many of them sought to add to their incomes by weaving during the inclement weather. In this way a cottage industry developed for the weaving of woollen goods. When the importation of cotton from the Levant to the Port of Liverpool made it possible, these farmer weavers added the weaving of cotton goods to their industry, and in the course of time found that they could do better by turning their whole attention to the weaving of cotton-goods, or "fustians" as they were then called, than they could by their farming and wool-weaving. As a natural result the weaving of woollen goods retreated to Yorkshire.

Weaving as an industry did not develop to any extent until there arose, in succession, several men of genius who invented improved machinery, such as Hargraves, Arkwright and others. Even their inventions did not produce their full effect until James Watt came in and gave them the steam-engine which really established the cotton mill industry. Speaking broadly, James Watt was more responsible than any other individual for the broad establishment of industries in Great Britain.

I have said enough to prove my initial points, namely, that the establishment of successful industries has almost invariably been effected by the genius and industry of some individual. Once established, it has resulted in the acquisition of knowledge and experience by others associated with the originator, and they in turn have launched out and established similar or kindred industries. Favourable local circumstances such as the supply of raw materials has exercised but a secondary influence, and from this we learn that the initial effort is the main thing, but that effort must be accompanied by technical knowledge and experience coupled with business acumen.

Complexity of industrial organisation.

We find that round each main industry some definite commercial system has grown and I will now summarise some instances of this :—The business connected with every industry may be considered as divided into 3 main parts :—

Firstly, the bringing together of raw materials.

Secondly, the manufacture of the material into the finished product.

Thirdly, the marketing of the product.

In the majority of industries each of these divisions is very intricate and becomes subdivided into many branches, which fact makes it extremely difficult to plant an industry, *ab initio*, in a new country. Further, around each industry there becomes established subsidiary industries contributing to it ; only in the case of extraordinarily large concerns with big capital is it possible for them to contain within themselves the whole of the branches of business and work which makes their existence possible. Consider some simple article of commerce such as an ordinary hand lantern. We find in such articles that the manufacturer needs to buy certain materials with which to manufacture the lantern, and as he will manufacture more than one quality the several different materials will themselves be in different qualities. He will need :—

(*a*) Sheet-metal.
(*b*) Wire.
(*c*) Glass globe.
(*d*) Woven wick.
(*e*) Tubing (in some cases).

His sheet-metal in the cheaper qualities will be tin. In medium qualities tin or iron sheet electro-plated, and in the best qualities sheet-brass. Some of the sheet-metal will be perforated with a number of holes known in the trade as " perforated sheet." The wire will be iron or for the better qualities, brass. He will also need soldering materials and some chemicals for soldering purposes. Either of these materials traced through from the raw state until they reach the lamp manufacturer will have gone through many hands ; therefore, the basis upon which he works is one of other industries, metallurgical and otherwise.

We find in a centre like Birmingham where the working of metals is the main industry that there are a whole series of industries depending upon each other. In connection with the supply of material there is firstly the metal-merchants who buy copper, zinc, tin, lead, nickel, bismuth, antimony and other such like metals from the importers. We next find metal-mixers, firms who have gained experience in the mixing of the various metals in the right proportions, suiting them for a variety of trades. Such a firm buys the raw material, mixes and melts it and sells it as ingots cast in iron moulds in readiness for rolling into sheet or rod. We then have metal-rollers, wire-drawers and tube-makers, After they have worked upon it the metal is ready to pass into the hands of the man who makes the lantern. The metal of the lantern requires to be cut from the sheet, formed into the correct shape, assembled together, polished and lacquered or electroplated. Many lantern-makers will send the pieces of metal to still another sub-branch of the industry, namely the stamper and piecer who will form the parts by stamping them in shaped dies. The manufacturers of the finished lamps cannot get into touch with the private user, but he sells them in quantities to factors and merchants and these dealing in many other articles will organise a system for selling the goods to smaller distributing houses or retailers. The merchant will organise a distributing trade in other lands usually through large distributing houses, who in turn are in touch with the retailers.

I have explained this matter in order to bring out the complex organisation that has grown up around many industries, and to show that it is practically impossible for one industry to exist without kindred industries, or without the commercial system which makes it possible. The system which has grown about other kinds of industry may be quite different. Take, for instance, the motor-car industry, which has grown up in the form of large factories or concerns, yet even those factories are not entirely self-contained

I do not think there is a single motor-car manufacturing concern in the world which makes the whole of the required details itself. The car is built up of many parts, some of which are manufactured by those who have specialised in that particular branch of industry. To name several—(1) the manufacture of springs is an industry in itself, requiring the selection of specially suitable material coupled with skill and experience in its treatment; (2) the crank-shafts are generally manufactured up to a certain point by the makers of steel, who forge out the crank from a special steel composition, rough machine it and then submit it to a special heat treatment to give it the required toughness. Thus, the crank-shaft may be delivered to the motor-car manufacturer roughly machined for him to finish or he may buy it completely machined. Again, he may require ball or roller-bearings, and these he obtains from firms who have specialised in this production. Such details as lamps, speedometers, gauges, wheels, tyres, he usually gets from makers of those particular articles. Thus, the motor-car manufacturer in reality is but a manufacturer in part though an assembler of the whole.

The commercial system for disposing of the cars is quite different from that already mentioned. Being a manufacturer in a large way of business he endeavours to create and maintain his name by advertisement; by putting his cars into organised races; and by displaying them at shows and exhibitions. His sales are usually effected through agents who are appointed annually at the autumn shows. The shows are organised by the trade as a whole and while it advertises them and endeavours to draw the public thereto, their special use is to fix up agencies for the coming season. The agents who are appointed for a particular town or area naturally desire to secure the best selling cars, so they approach the manufacturer to secure his agency by offering to contract for a certain number of cars for the season. The manufacturer will naturally accept the agency of the man who will contract to sell the most cars, providing he can prove his ability to meet his obligations. The manufacturer thus enters into a series of engagements with a number of agents, endeavouring to sell ahead his season's produce. The agents on the other hand may endeavour to ease their own obligation by keeping in touch with each other and cross-selling between themselves.

The organisation of the cotton trade of Lancashire is still more complex. The raw material is a season's crop and it has to be spread over the needs of the trade for a whole year. It is practically impossible for the cotton manufacturers to buy such heavy stocks at the time the crops come on the market as to last them the whole year; particularly, as they may not be able definitely to forecast the amount of business they will do. It would require too large a capital for them to be able to do this; nevertheless, they have to make forward contracts both in the matter of disposing of their manufactured goods and in purchasing supplies. A manufacturer finds sufficient use for his whole energy within his own establishment and he cannot devote attention to the cotton market to any great extent. His concern is first to know what it will cost him to convert the material he buys into the form in which he sells it again. His further concern is to buy his raw material and sell his produce on a sufficient margin to pay his expenses and leave a profit. If he bought material too heavily and the market rate fell before he arranged his sales he would stand to lose. He will accordingly negotiate contracts with the buyer of his goods and with the suppliers of the material that he may close the same leaving him the margin he needs. In arranging his contracts he may be buying for delivery months ahead and selling in the same way. The risks, attendant on the supplying of material at the rates he can afford to pay, by the manner of his purchase, he passes on to brokers, and importers, whose business it is to study the cotton market and those matters which cause fluctuation in prices. The cotton industry has become divided into a number of branches, namely, spinning, weaving, bleaching, dyeing and printing and each one of these branches is dependent to a large extent upon the other. My purpose in putting this forward is to indicate the complexity of the cotton industry as it has grown up as regards manufacture and in the commercial side connected with the supply of material and sale of produce. The complexity has become necessary because of the wide nature of the interests involved and in order to shift the financial burden of the industry on to many shoulders. There has become established certain exchanges in Liverpool and Manchester where the members of the industry may meet together and arrange their business. The iron trade also has a somewhat similar complex organisation.

My further purpose in advancing these notes on the development and organisation of industry is to examine the same to see if it be possible therefrom to formulate a policy applicable to this country. At first it seems somewhat discouraging, yet I am not sure that it should be so considered. We have seen that many of the staple industries of England began in the form of cottage industries, and in the course of time they became concentrated into large factories.

From the social point of view it is questionable whether the development of a large factory system is desirable. The confined life of a factory doubtless exerts an adverse influence upon a community, creating a spirit of dissatisfaction and discontent. On the other hand a cottage or small workshop industry on lines I will shortly indicate, is far more likely to lead to happiness and contentment for those engaged therein. We have seen that even the larger industries are not wholly self-contained, but that they consist of a number of branches, each dependent on and working in collaboration with others. It is conceivable that certain lines of industry now operating on the factory system could be split up into sub-divisions and be organised into the small workshop system.

Cottage system.

One very dominating cause in producing the factory in the past was the necessity for steam-power to drive the machinery required. The need for capital to buy the necessary machinery had also a very great influence in converting the cottage industry into the factory system. In certain trades, where expensive machinery is not necessary, we find the cottage or small workshop system still holds its own, as for instance in many of the light metal-working industries, such as the manufacture of jewellery and other ornaments, light chain-making, etc. The latter is found in the Bromsgrove district of Worcestershire. In Switzerland we find the watch-making industry has largely grown up on the cottage or small workshops foundation, although machinery and power are both necessary therein. The watch details are each manufactured by different people who own the necessary machinery for their work. In the past this machinery in small workshops was driven by water wheels in the mountain streams. The introduction of electrical power has made it possible to distribute, economically, power to small users and there the development of electricity generated from water power has made it possible to carry on and extend the cottage or small workshop system.

The advantage of such a system is that every man with initiative and energy may be his own master and work such hours and at such speed as he may choose. He may also be assisted by members of his family who thus learn the details of his trade. Such a system calls for certain mastermen who will draw together the product of these small makers, have it completed into finished articles and organise a commercial scheme for disposing of the goods.

Industrial settlements.

A cottage system such as that indicated may possibly be developed on co-operative lines, but it needs initiative and directing brains. There are various places in the Punjab where water power is running to waste, particularly at many waterfalls on the Irrigation Canals. In but a few cases hitherto has any effort been made to utilise this power. It would seem to be within the range of possibility to bring about industrial settlements at places where power can be cheaply developed and distributed at low cost to small users. Great difficulty would undoubtedly be experienced in bringing into being such industrial settlements, and I fear one of the greatest would be the character of the people. In the course of 13 years' experience in this country I have been struck by the great lack of eagerness on the part of workmen to attain skill in their trades. As an apprentice in an English workshop I was in close touch with the men and found that one and all took great pride in the skill acquired in their work. Apprentices strove to attain that skill and competed with each other in their efforts to do a high quality of work. An apprentice was usually bound to serve 5 years in learning his trade, whereas in this country when a man has spent as many months in a workshop, he imagines he has all the skill he requires. The many applications I receive for increments of pay are invariably based on the plea that the applicant has worked for me a certain period of time, or that he has a large family to keep, but never are such applications based upon a claim that skill has been acquired. Consequently, any effort to promote industry must be coupled with a further effort to promote in the workman a desire to excel in his trade and to produce a superior quality of work. This practically means the development of a higher moral standard in the artisan class. It seems to me that elementary education in itself will not give this, but that a system of pupilage or apprenticeship must be introduced. Further, to insure the development of the desire to acquire skill, I would introduce a system of license without which, in the cottage industry system, a man should not be allowed to engage in trade as a masterman and the issue of such license should be based upon proof by test of his ability to produce high class work. In this way a high standard would be set in the industrial settlement, and any man falling away from the required standard should lose his license.

Apprenticeship system.

Necessity for expert advice.

It frequently happens that a man who is an excellent workman and who has got together the necessary capital to start in business is deficient in business knowledge, with the result that after a while his affairs become involved and he finds himself faced with ruin. I would here digress to put forward a scheme which was at one time worked in a certain industrial town in England. A few gentlemen engaged in industry observing that the moral tone amongst their workmen was not of the best, originated, in connection with a religious institution, a Sunday afternoon class for men. It was of a religious character

but of a practical kind. They sought to improve the character of the men by teaching them morality, sincerity, honesty, integrity, probity, sobriety and in general the living of clean lives. The class became a great success and each Sunday afternoon saw hundreds of men in attendance. The organisers, themselves men of high character, in their efforts to get into close touch with the men that they might exert good influence upon them, encouraged them to bring along their private troubles that they might receive advice and guidance. They soon found that many of these men were engaged in business in a small way and the troubles they made known were frequently in regard to their business affairs. This resulted in the establishment of a movement by the organisers, which had for its object the assistance of the men in their business troubles. They accordingly established themselves as a financial syndicate, each contributing to its capital. This syndicate, though founded for a philanthropic object, was handled in a business-like way by business-men. When one of the men finding himself in difficulties brought them to the organisers of the Sunday afternoon class, they took his affairs in hand, investigated them and when they saw his business held the germs of success they advanced him capital, and arranged that certain of their numbers should act as advisers to him in his business. He, in accepting their assistance, undertook to follow their advice and guidance. His business had to pay interest on the money advanced and to refund it when possible. To the help and guidance of this body of men a number of important industrial concerns owe their flourishing existence to-day. The success of this philanthropic experiment goes to show that any attempt to promote industry must be coupled with skilled guidance and supervision, that the industrial enterprises may be steered through the shoals of inexperience and lack of industrial knowledge. This points to the need of a Board of Industrial Advisers and such a Board should include technological experts, business organisers and financiers. It may be safely inferred that no young industrial enterprise can rise to a condition of prosperity without passing through periods of adversity, and, in this country, where the custom is so prevalent of fleeing to the money-lender and usurer, the young enterprise would most certainly be wrecked on its first encounter with adversity were it not guided and helped in a proper way. The very essence of such help is that it should be of an expert technical character. For that reason I fail to see that a Department of Industry under the direction of one who himself is not an industrial expert can be of any use whatever.

Pioneer factories.

I have pointed out that in the history of industries the initiation has usually been effected by some man of genius and special ability. The work done by him has resulted in the training of workmen and the ultimate development of not only that particular industry, but also of kindred industries employing similar methods of manufacture, or otherwise by direct influence. It is not possible for Government to raise the man of genius, but it is possible for Government to accept the risk involved in an effort to establish a a pioneer factory. Unfortunately, a ruling of the Secretary of State some years ago prevented the Indian Government adopting such methods. To endeavour to establish an industry by persuading some persons of wealth to put money into it, and who may comply with the expectation of honours or favours to come, is unquestionably an erroneous method. The successful establishment of a pioneer concern is the essential thing, and by successful I mean not merely a concern which can produce or manufacture certain articles, but one which does it with commercial success. Individuals will only exert energy and take risk when they see the prospect of reward to themselves and no better inducement can be offered than that of success achieved by another, and no better training school can be established than that of commercially-successful industrial concerns.

The mere formation of technological classes will not establish industry, although as an adjunct to an established trade it is most useful in assisting its further development. Such classes without the established industry are but a waste of money and effort, and creators of disappointment and discontent.

Most industries to-day call for the manufacture, use and maintenance of machinery, thus every industry with few exceptions calls for men with mechanical knowledge. Unfortunately for the prospects of industry in the Punjab, the people do not show any aptitude for that branch of knowledge. I have employed thousands of workmen in engineering work, yet of that number I cannot point to half-a-dozen who I can consider have any real instinct for mechanics. When a machine is placed in the hands of a workman his tendency is to run it to a standstill. I can point to certain concerns whose existence depend upon machinery, yet where it is neglected and allowed to degenerate to the point where repair is practically impossible. This points to the need, where money is raised from the public, for periodic inspection and enforced maintenance of plant, otherwise shareholders must ultimately lose their money together with their faith in industrial concerns, to the detriment of progress. The whole matter of finance for industrial enterprise rests on the creation of public confidence in such investments and this can only be secured by honest and successful trading. We have seen instances of the juggling of accounts, especially with groups

of concerns under one management, followed by the inevitable collapse which breaks public confidence. This can only be checked by suitable audit under a control which cannot be influenced.

Government financial assistance.

In the matter of financial aid to enterprises, I am of opinon that grants-in-aid, bounties and subsidies are unsound. The effort should be to promote vigorous growth on sound lines. Enterprises should not be founded in the expectation of preferential purchase of products by Government, as, if that is granted, it will check others embarking in similar enterprises without such Government support. Help should rather be given by creating lines of least resistance such as by the raising of a barrier against goods of foreign origin. Government should not expect to create enterprises by putting all the risk upon other shoulders, and it would undoubtedly create confidence if it contributed to the required capital on the same terms as the public, and also took part in the direction of the concern. The advancement of loans or supply of machinery on hire-purchase merely places the risk upon others, whereas, in that it is the wish and to the ultimate benefit of Government that the industry should be successfully established, it should accept its share of risk. Relief from taxation would help a struggling concern and I would certainly stop municipalities placing special taxes on engines or other machinery, which in some cases is now done.

Government control when assistance given.

Where Government financial assistance is given in any form it would be necessary that there should be a measure of control such as by the appointment of directors and by audit, but this assistance should not be accompanied by increased expense such as by requiring the preparation of elaborate returns in duplicate for submission to the auditors. Only simple accounting should be required, coupled with graphic methods of indicating results. Definite restrictions should be placed upon directors to prevent them finding well-paid posts for inexperienced relatives and friends, and also to prevent them using the industrial concern as an aid to the private trading of themselves or their friends. The acceptance of improper gratification by any director of a public company to the detriment of such company should be severely dealt with.

Assistance in marketing.

When endeavouring to establish an industry Government should at the same time develop a commercial system around it, of such a kind as to spread the risks of trading over a suitable base, on the lines that have grown around such industries in other countries. Small concerns cannot sustain the expense of systematic advertising, neither can they afford the expenses of a traveller. The Principal's attention is needed to supervise production and the need to go out to seek markets would cause a division of effort to the disadvantage of the concern. It is common for allied concerns to engage a commercial traveller to represent the whole, each paying a share of his expenses *plus* a commission on the sales effected. Assistance could, therefore, be given at first by subsiding commercial travellers, who should carry a full range of samples of goods. They should move around with Government support, should visit towns and villages on their beat, display goods in a public room, and invitations should be issued in advance by the local Government official to all retailers and others to attend and inspect the goods with a view to purchase, and the establishment of local agencies. Such local displays of samples would be analogous to the motor shows in England where business is arranged on the lines previously explained. Where it is considered that pioneer factories are essential to the establishment of an industry, I am of opinion that preferably, where it can be done, an independent concern should be established in which Government should take a share of the capital to hold until such time as the concern is a success. This would automatically require participation in the direction and in suitable audit, together with the provision of necessary expert advice. When the concern is fully established, Government could at its discretion and by arrangement with the directors, dispose of its portion of the shares, thereafter leaving the company to follow a normal course. When the risk is too great to justify Government following this course of inviting outside capital to participate, it could reasonably establish such a concern accepting the whole risk itself. At a suitable stage in development it could turn the concern over to a public company in which it could hold part share and when that in turn is a commercial success, it could withdraw by arrangement as in the previous case.

Sales agencies.

Government policy in pioneering industries.

Technical aid to industries.

In regard to the provision of technical aid to industries, it may be observed that in different branches of Government work there is a considerable body of technical experts, already in the country, but the conditions attendant upon their appointment largely prevent that expert knowledge being accessible for industrial enterprise. In my own experience, covering 13 years in this country, although I have a considerable fund of technological experience and knowledge, yet it has not been available for the assistance and guidance for those outside Government departments. The advice of medical experts in Government service is available for the benefit of the public on the payment of their usual fees, and it would seem to be reasonable that the advice of technological experts should be available on the same terms or that the scope of their duties should be extended to cover this work.

Consulting Engineers.

I am of opinion in direct reply to your question 27 (*a*) and (*b*) that engineers employed by Government should be permitted to give technical advice and prepare plans and estimates for private firms and individuals, providing they do not allow it to affect their duties detrimentally.

At the Central Workshops, Amritsar, I have carried out a considerable amount of investigation and experimental work, particularly on lines associated with Irrigation problems. A number of years ago I embarked upon a series of experiments on pumping water from the sub-soil with the result that I produced a form of tube-well and a series of pumps to work with it which have proved most successful. Their use has developed to the stage which indicates that a new industry, that of manufacturing the necessary parts, making borings in the ground, and installing the necessary machinery has become firmly established and is likely to develop to a large extent. This is an instance where the researches conducted by a Government Department have greatly benefited both industries and agriculture.

Demonstration factories.

In reply to your question 19, my previous remarks go to show that I do not hold with demonstration factories, considering that commercial success is a prime necessity in the initial effort to establish an industry.

Land policy.

With reference to your questions 40 to 43 (*a*), it has come to my knowledge that various efforts at establishing industrial concerns have failed to mature or have experienced considerable difficulty, through inability to secure suitable land on which to establish their enterprise, and it seems to be necessary that Government should assist *bonâ fide* concerns to acquire land at a fair market value, and if it already has not the necessary power to acquire land for such purposes, it should be provided.

There does not appear to be any great difficulty in obtaining subterranean water-supply, the development of the tube-well already mentioned having placed such water within the reach of any concern at quite a moderate expenditure. It seems to me, however, that more ready facilities should be given for the development of water-power installations at such sites where it is not actually needed for Government purposes.

Apprenticeship system.

With a view to training mechanics I inaugurated an apprenticeship system at the Central Workshops several years ago. I found considerable difficulty in retaining the services of such apprentices sufficiently long to make them good workmen. So soon as they had gained a smattering of knowledge they imagined themselves quite able to go elsewhere as fully paid workmen. In order to check this, I required them to pay a deposit of Rs. 100 coupled with the conditions that they gave three years' services to learn the trade, with pay on a certain rising scale, and that on the completion of that period of time they would be given certificates to state the service rendered and the degree of proficiency acquired, and their deposit which had been placed in the Post Office Savings Bank should be returned to them with the interest thereon. Objections were raised by the Accountant-General to this procedure, on the ground that it was not authorised, consequently I had to allow my scheme to lapse. Under this scheme, however, six or eight apprentices did pass through the shops and some of the most successful of them were also given drawing office training and they have turned out to be good men. I consider it unfortunate that the scheme was not carried further ; only by such apprenticeship system can qualified men be trained, for unless they are actually bound down they will not persevere with their training

Industrial schools.

I have had some experience in employing students from Industrial schools. While some of them have been good, the majority of them have in my opinion been spoilt by their training. Practical experience is essential for an engineer, yet such students imagine that the possession of certificates from an industrial school or college is a proof of the completion of their training, and that they should be given highly-paid posts requiring no manual labour, yet none of them are sufficiently experienced to direct or control other men in their work, and their knowledge of factory organisation is *nil*. Men suitable for supervising and for managing positions cannot be produced by school training alone. An apprenticeship system is most certainly better especially if it leads up to the higher branches of the work. No supervisor or manager can be considered a qualified man unless he can understand and make drawings and designs: therefore the training should lead up to that. To teach a youth the higher branches of his work before he has learnt the lower is to start at the wrong end, for he cannot so well understand what he is doing and learning. He should learn to use tools and machines before he attempts to draw them. A working knowledge of English is essential, otherwise the great fund of technical literature is closed to them, also means of organisation cannot so readily be worked. It would, therefore, seem necessary that prior to apprenticeship, education to the point of having acquired enough English to read and write should be required. Towards the end of apprenticeship, tuition of a practical character in drawing and designing should be given to those

selected as having proved themselves able and intelligent in practical work. The rudiments of such instructions should previously have been given in evening classes.

The organisers of technical schools and colleges are rather apt to overestimate the value of their own work, and being more facile with the pen and in speech than the factory organiser, they are likely to obtain more ready hearing and support. It is to their interest to boom their methods, whereas the factory organiser's interest is not to attempt to create opinion but rather to make his concern a commercial success. No technical school can compete with a well-organised engineering shop in the production of skilled mechanics and engineers.

Training abroad.

A system has been tested of taking selected students from collegiate or technical schools and sending them to other countries at Government expense to learn some particular trade. I have met several such and have formed the opinion that the system is not a success. A student may go to special colleges such as the Manchester Technical School for Spinning and Weaving, the Northampton Institute for Engineering or the Bermondsey School of Tannery and there learn the theory and principles associated with a particular industry, yet upon his return to this country he is not sufficiently qualified to establish the industry here, chiefly because he has not learnt the business, the internal organisation and those practical technical details essential to success which are evolved within the factory and which no factory-owner will lay himself out to teach to others when he knows that by so doing he will create competition for himself.

Patent Laws.

With reference to your question No. 95, considering that invention is essential to industrial progress, it is desirable that every possible inducement should be given in the way of facilities for acquiring patents and for their maintenance. It is to be expected that no man will concentrate his effort upon the production of improvements and of improved methods, unless he has reason to suppose that it will bring some measure of reward to himself, a reward commensurate with the importance of the invention. The income derived from the operations of the Patent Law cannot be of serious importance to Government, while the encouragement of invention may indirectly produce far greater results. The law which requires the payment of annual fees for the renewal of a patent and the right to use the product of a man's own brains actually penalises invention. It is, I consider, desirable that all such annual taxes should be removed, so that once a patent is granted it will remain in force for its full period, subject however to one condition, namely, that the patent shall not be allowed to become moribund. To insure this it should be required of a patentee that after a lapse of a certain period of time, say five years, he should show that the invention is being produced or worked, or alternatively that failure to develop it was due to no fault of his own or of others who had acquired an interest therein by purchase or licence. I am aware that in many countries such taxes are imposed, yet it is an acknowledged fact that it bears heavily upon the poor man and tends to retard progress. I believe that I am correct in saying that in the United States of America such annual taxes are not imposed, and it is generally agreed that the American Patent Law is a substantial help in the development of industries. In a country like India there is in the employ of Government a large body of experts in various branches of technology and, according to the existing Patent Law, a patent granted to an employee of Government bears the condition that Government shall have the right to make and use the invention without payment, or upon such terms as it may arrange. My experience is that the terms granted by Government are wholly favourable to itself and discouraging to the inventor, for although I have taken out many patents which Government has made and used to a very great value yet I have received no consideration whatsoever in respect thereof. Considering the need for progress, I consider that the law should be framed in such manner as to encourage officers to invent and bring out improvements instead of discouraging them in this way. It does not seem desirable that the law should be so framed that in the case of a Government employee it takes from him the rights of citizenship and assumes that in accepting such employment he has sold not only his services but the entire produce of his brains. It is not every man who has the ability to invent, and it does not seem fair that those who have such ability should be treated as of no greater value than those whose ability is limited to the successful fulfilment of their normal daily duties. I think the Patent Law should be modified to make the exclusive rights granted to the inventor in the case of Government servants apply equally to the Crown as to private individuals, with possibly a clause that the terms upon which Government should use such inventions should be reasonable and in accordance with trade usage where such exists, and in cases of difference of opinion between Government and the patentee, the matter should be decided by an impartial arbitrator. I would further suggest that as an encouragement to invention, Government should create definite rewards for inventors who produce inventions of real value to any industry, to the community in general, or to Government itself, the purpose being to stimulate and encourage invention which is the soul of progress.

Hydro-electric power.

Some movement has been made in the Punjab in the direction of developing hydro-electric power. A considerable amount of water-power is running to waste which could certainly be developed, and we may consider this branch of work is in its infancy in this province. The actual work done consists in the utilisation of water-power for driving the woollen mills at Dhariwal. The power is partly used directly for driving machinery for spinning and weaving and partly for the generation of electricity used for a similar purpose. A second plant has been installed by the Irrigation Department at a canal fall near Amritsar. The power developed is used to pump water for irrigation purposes from a number of my patent tube-wells. A second scheme for irrigation by pumping has been sanctioned on the Lower Chenab Canal, but its development is held up for the present by the impossibility of getting the necessary machinery at reasonable cost. Other similar developments are under consideration and are likely to mature when conditions become more normal. Beyond these instances little has been done in this direction.

Conclusions.

Having expressed opinion on many of the points raised by your list of questions, I will now endeavour to formulate some working conclusions. Inasmuch as industrial development fostered by Government care should aim at producing not only prosperity and wealth, but more particularly a happy, industrious and prosperous people, and the policy adopted should apparently not simply aim at the establishment of large industrial factories. Certain it is that many trades are of such a complex character that they cannot be economically organised in any other way, and when this is the case the aim should be to bring about the establishment of not merely the factory, but also healthy living circumstances for the factory hands. It is too often the case that factory life is but little better, if I may so express it, than paid slavery, which leaves little in the nature of wholesome conditions in their lives. Factory legislation has done much to bring about healthy conditions within the factory, but there appears to have been nothing accompanying it outside. There is always the tendency for the workpeople to crowd into the dwellings in the near vicinity of the factory. Cost of living accommodation and of food, etc., is forced up by landlords and interested parties, seeking to make money to an unreasonable extent out of the factory hands. Many of them become indebted to the *bunnia* who demands their wages from them on pay day, so that they live in a constant state of indebtedness to him, so much so that he holds them in a species of thralldom. I would like to see associated with every factory enforced conditions as regards the proper habitations for the factory hands, together with stores run on the co-operative system for the supply of their needs. I would further like to see a system of enforced thrift, something on the lines of a provident fund, whereby a percentage of the earnings of each factory hand should be placed into a banking account. This account should not be touched except upon very definite conditions. It would be necessary to make this account available up to a certain percentage of the individual holding in any one year to meet the contingencies of marriage and death, and I would further create such conditions and rules as would completely discourage or prevent the contraction of debt with money-lenders. To secure such ends Government could well accept the idea that it should contribute to the funds or share capital required to establish the concern.

Industrial settlements.

While the large factory is indispensable in certain cases yet there are many industries which could be developed in industrial settlements. Many industries cannot be worked without machinery and probably those could not be developed on strictly cottage industry lines, but many of them could be developed in what I would call a settlement of small workshops, each with its masterman and a small number of journey-men and apprentices, possibly worked on the family system. I will now endeavour to sketch the lines of such a settlement. Each settlement should deal with one industry or allied group of industries such as work up one class of material, or by similar methods. To particularise :— One settlement might perhaps deal with bone as material. The various workshops within the settlement would produce a variety of different articles each made with bone as its chief element, as for instance bone-buttons, shirt studs, fancy ornaments, tooth-brushes, shaving-brushes, combs, knife-handles, pen-holders, knitting-needles, crochet-hooks, paper-knives and possibly also in the same settlement horn and celulloid could be worked. The waste product from the working of bone could be boiled down into glue or be refined into isinglass, or again it could be converted into fertilisers. Another settlement could work up various kinds of bristle fibres into all varieties of brushes ; still another could particularly be devoted to the working up of fibrous materials into string, cordage, ropes, mats, matting, nets, hammocks and even certain species of furniture. Another settlement could deal especially with the working of tin and sheet iron, producing such things as tin teapots, cooking vessels, bowls, toys canisters for storage of food-stuffs, cash boxes, jewel boxes, despatch boxes, papertrays, etc. Others could deal with a variety of articles such as could be produced in dies by stamping and pressing. This would include such things as metal buttons, steel pens, pen-

holders, various other details of stationers' sundries, cabinet fittings, builders' ironmongery, hinges, small electrical fittings and the like. In the near vicinity of the Punjab hills where many excellent kinds of fruit are grown, the canning, bottling and preserving of fruits and fruit syrups could be developed. Convenient sites could be found on some of the great rivers for the organisation of wood-pulping, papermaking, mill-board-making together with variations of the same, such as corrugated mill-board for packing purposes, waterproof packing papers and card-board boxes. Wire would be a convenient material to be manufactured and worked into a variety of wire goods, such as bird cages, rat traps, wire gauze for doors, fencing wire, wire nails, boot springs, small rivets, buckles and harness furniture. The above list does not by any means exhaust the series of industries which could be established in the manner indicated.

The success of such an industrial community would absolutely depend on its organisation. The series of small workshops would probably be largely interdependent and the rules controlling the settlement would need to be framed in a manner to foster industry and discourage sloth. Each such settlement would need to be managed from an organising centre which would control the commercial element both as regards the buying of material and the selling of the products. The organisation would need to be formulated on the lines of a co-operative system yet differing somewhat therefrom. An initial prinicple would need to be recognised, namely, that no person will give of his best without a proportionate remuneration or reward, and that from a commercial point of view this means payment by results.

The most important man of the community would be the organiser or, as I would call him, the factory manager, and he should be responsible to the Government for the organisation as a whole, and his remuneration should be partly by salary and partly by the results obtained in working the settlement. He would be responsible, under audit, for the correct keeping of accounts, and in his case trickery, fraud and other criminal acts adverse to the interests of the settlement should be subject to heavy punishment including confiscation of property.

The planning of the settlement village would be on the lines of a series of small groups of buildings, each group to accommodate a family or a man and his journeymen. The group would include a small workshop properly arranged and lighted. To insure pleasing surroundings the villages would be planned by a town-planning expert.

In the case of industries needing machinery, and there are few that do not, such machinery would be installed in the workshop together with an electric motor to drive it; it would not become the man's own but he would be allowed to use it in accordance with controlling rules. Electricity would be supplied from a central power station connected with the settlement to all these small workshops. The conditions under which a man would be permitted to enter a settlement or remain therein would initially be, that from the workshop and machinery placed at his disposal, he should produce a certain minimum of work of the required standard of excellence. For this work he would be paid on a special system, carefully formulated to insure the proper working of the plant. A certain minimum outturn per day being required, he would receive pay for that minimum at a certain rate and for all that he produces in the day above that minimum he would be paid at a higher rate. Such a system would be analogous to the premium-bonus system in operation in many factories at home. It might be that one of these small workshops in itself could not produce a complete article, but that it would be confined to producing a part or the part production of one which would be worked to a higher stage in another of the workshops, but the produce of each would pass to the stores at the organising centre and would need to pass close inspection before acceptance.

In connection with the central organisation there would be a store for the supply of the settler's needs and they would be at liberty to draw such goods up to a certain percentage of the earnings placed to their credit. Each month's accounts would be settled so far as production was concerned, and I would have it that at such a settlement a proportion of each man's earnings should be placed in a provident fund. Rules associated with this fund would control its investment and also the issue of loans to meet the contingencies of life such as marriage, sickness and death. By arrangement as to the proportion of a man's earnings retained, the fund could become a combination of provident fund and family pension fund, thereby providing for nominated members of the man's family in the case of death. The maintenance of the plant of the small workshops, the working of the settlement power plant, the expenses of the commercial system, whether it be commercial travellers, agencies or advertisement, would be met out of the settlement fund, the selling price of the goods being fixed to have a margin for that purpose; thus, the individual running the small workshop only has to produce the goods required from material supplied, while he and the members of his family, his hired workers and apprentices constitute the labour.

The settlement as a whole would approximate to the factory in its system of management, store-keeping, inspection of manufactures, payment of labour, and sale of its produce, but it would differ therefrom in important points. It would be organised as a village settlement without the confines of factory walls or the imperious summons of the factory bell; there would be a measure of freedom for the man and his family; he would not be separated from them while pursuing his labours and they could render him assistance for their mutual benefit and his children would automatically learn the mystery of his trade in early youth. The man could commence his work when he liked, take his food when he pleased, and visit his friends when he wished, his only restraint being that he must produce a minimum of work. He would be relieved of the worries attendant upon the finding of a market for the goods he makes, and the material he needs would be purchased wholesale in the cheapest way rather than in dribblets from the high-priced retailer. He would be protected from the thralldom of the *bunnia*; for one condition of his continuance in the settlement should be that he deals not with the money-lender.

It will be observed that the organisation of the settlement should be somewhat on factory lines without the factory. I would call these industrial settlements settlement factories, and the commercial agents who would be the equivalent of the managing director of a commercial concern would be the factor. When the settlement grew to dimensions justifying the arrangement, the factor would be given assistants, firstly a commercial assistant and secondly a production-assistant. The factor would be the head Government official of the settlement and responsible for its whole running and for the maintenance of law and order. He would thus be invested with the powers of a magistrate. His powers would be large and he would need to be a carefully selected and trained man and his remuneration as already stated would be based upon a salary together with a proportion of the commercial results obtained by the settlement.

It would be necessary that the factory manager should be subject to control, as also he might need advice and guidance, both as regards means of production and as to the conduct of the commercial side; such control and guidance would emanate from a body of men appointed by Government, namely, the Board of Industry, who would act in respect of all such settlements in the same way as a Board of Directors would control a number of separate factories, as is frequently the case in England. The chairman or President of the Board would be the Director of Industries and he should be a specially-selected man with broad knowledge and experience of technology and business. Such a board would need to control the necessary funds with which to establish and finance, in its early stages, such industrial settlements and factories, and Government would need to be prepared to lose money in some cases, accepting the same as a fair risk to secure the broad results at which it aims, namely, the development of industries on a system which should produce a prosperous, industrious and contended people

The profits from running the settlement, when profits there were, would be divisible according to an arranged scale, one moiety going to Government in lieu of all other forms of taxation. The remainder after payment of all expenses, such as in a commercial organisation would be known as "on cost," would be divisible partly to the commercial organisation side and partly to the production side, that is to say, all who compose the settlement would receive a portion of the profits of its work. The payments initially made to the workers for work done and as wages to babus, accountants, travellers and others would in every case be payment in part, the balance coming to them within a certain time of the closing of the financial year, such balance being equivalent to the bonus which is paid to employees by many commercial concerns.

ORAL EVIDENCE—20TH DECEMBER 1917.

Mr. C. E. Low.—*Q.*—In your written evidence in the paragraph on the apprenticeship system you say "I would introduce a system of licence without which, in the cottage industry system, a man should not be allowed to engage in trade as a masterman and the issue of such licence should be based upon proof by test of his ability to produce high class work." Do you refer here to this system of industrial settlements only?—*A.*—That is what I had in my mind.

Q.—How would these industrial settlements be financed in the first instance?—*A.*—I consider the only way in which such industrial settlements could be worked would be by Government. A suitable site where power could be made available should be selected and laid out for a particular class of industry. An industrial settlement should then be established in the same way as an agricultural colony as now settled.

Q.—But in the case of a canal colony, you have not got to incur much initial expenditure; there is a rush to come in, and the colonists pay money for the land, and you don't require to finance these agriculturists to start with; but in this case you have to

get your power and you put down your motors, and then perhaps you have to build them houses and so on?—*A.*—I would propose to lay it out entirely. In agricultural settlements the people do not build the canals on which they depend but Government does.

Q.—And then for some time after they have started, while they were working up the market and so on, how would you manage to finance their manufactures, purchase raw materials and so on? My point is this—Do you mean to start on a big complete scheme or do you propose to work it up gradually?—*A.*—The scheme for the settlement should be planned out as a complete whole, but it might be necessary to limit the start to a portion of the scheme, provided that such portion could be worked without the remainder. The portion would then be the foundation upon which the remainder would grow. I have likened the idea that I have put forward to that of a factory. If you are starting a factory you must put down capital for the purpose of buildings and machinery and for the purchase of stock, etc. In like manner such a settlement which I have likened to a factory would need to be established.

Q.—That is to say the finance of it would be exactly the same as the finance of a factory?—*A.*—Practically. You probably will have observed the main idea I had in my mind in putting forward my suggestions. We have seen the very great drawbacks that attend the development of the ordinary factory, and my effort has been to produce a scheme for the development of industry without the drawbacks of the big factory by doing it on the lines of cottage industries so organized as to make it possible for them to compete with the ordinary factory.

Q.—Can you point to any similar precedents in any part of the world?—*A.*—I have in the course of my notes given you some historic references, and I have pointed out how in certain industries in England the system is being followed and has grown up.

Q.—Quite so, but you are pursuing this matter rather differently?—*A.*—You want to plant industries here, and therefore you cannot wait for their development; you have to give them a start. As I have further pointed out, most of the industries at home have begun on the initiative of some individual of genius and special ability and upon his work the industry has gradually grown up; well, as I have further pointed out, Government cannot provide the genius, but it may provide the foundation upon which an industry may grow.

Q.—That is to say, you substitute the organising possibilities of Government for the initiatives of the individual?—*A.*—Precisely.

Q.—You want a sort of general marketing arrangement for the industrial organisation in the province; it would not be entirely economical to make this scheme of your own rely entirely on its own marketing arrangements?—*A.*—I have pointed out in another portion of my note that it is by no means uncommon at home for several firms to unite together to finance their marketing arrangements; they will send out a joint-traveller, each small firm paying something towards his expenses, and in addition to that initial expenditure they pay him a percentage on the indents that he books. The small man here in a cottage industry in like manner cannot afford to pay travellers and to seek his market; but a settlement worked in the manner I have indicated could send out travellers and appoint agents, as it would work on co-operative principles.

Q.—In your next paragraph on page 6 you say: " I fail to see that a department of industries under the direction of one who is himself not an industrial expert can be of any use whatever: "—what will you have an expert in? When you get your industrial expert, you realise of course that he cannot be an expert in all industries?—*A.* Yes, I quite realise that. When I speak of an industrial expert I mean a man who has been sufficiently associated with industry in some branch and with commercial matters to an extent which enables him to thoroughly understand the organisation attending an industry and its methods of finance.

Q.—Don't you think he will be liable to be obsessed by the particular branch of industry in which he himself is an expert?—*A.*—There is of course that possible danger, but he should of necessity be a man of broad mind; he would have to be selected accordingly.

Q.—Do you think you can get a suitable man?—*A.*—That is rather difficult to say. You will perceive by what I have written that a man with the necessary ability to fill such an office would need to be a man of worth. That is to say, it would be no good putting a man into that position who himself has been a failure in industrial matters—you must have a successful man. We see many examples at home in connection with the Ministry of Munitions; the organisers there have been the leading men in the particular industries.

Q.—But in the case say of a man like Lord Davenport who was a very successful industrialist and a very successful commercial man himself, he was a failure in organising food economy and might also fail in any other business to which he was not accustomed ?—*A.*—The organization of a food economy campaign is not the organization of industry. You cannot be certain of a man until you have tried him.

Q.—A man like that if he is worth anything would require a very high salary ?—*A.*—Presumably he would want a very good salary.

Q.—What sort of salary have you in your mind in a province like the Punjab which you presumbly know best ?—*A.*—Well, I certainly think you would not get a man of the necessary ability under 2,000 to 2,500 rupees a month.

Q.—You go on to say in the next paragraph about pioneer factories.—" Most industries to-day call for the manufacture, use and maintenance of machinery, thus every industry with few exceptions calls for mechanical knowledge. Unfortunately for the prospects of industry in the Punjab, the people do not show any aptitude for that branch of knowledge." In small organised factories in the province do you consider that the machinery generally is kept up in a state of efficiency ?—*A.*—From what I have seen I consider it is kept very low. As I have pointed out, the tendency is to start a machine and run it until it absolutely breaks down instead of keeping it in a satisfactory state of repair. My experience is more particularly connected with the factories of this district and the information that I have gathered in conversation with people engaged in such factories. For instance, I have been to a large mill and looked at the plant. You will see engines, pumps, and machinery, dirty, badly worn and ill-kept while the steam-piping leaks at every joint, the whole being in a condition that would be considered extremely bad in a home factory.

Q.—Could you form any idea, speaking in the widest way, as to what percentage of its efficiency machinery of that sort is losing right through the mill in a very rough way—would it be 2 per cent, or 8 per cent, or 10 per cent ?—*A.*—It will vary in different factories, but I should think many of them would lose an efficiency of certainly 20 to 30 per cent. or more.

Q.—Do you think that if you had in connection with an industrial department an expert mechanical engineer or two going round, he can help these people to keep their machines in working order ? Or would you say that even then they would not take the trouble ?—*A.*—I don't think they do know really, but the greater fault I think is a species of indifference. You see people with motor-cars, you hear them rattling and rattling, and they go on rattling until they absolutely break down.

Q.—But apart from making the people more careful, looking at things from a different point of view, if you adopt this comparatively easy preliminary step of giving them individual advice in particular cases of inefficiency, do you think that would be of assistance ?—*A.*—I doubt that it will be of very great assistance, for they avoid spending any money on machinery in order to maintain it. Their desire is to get what money out of the factory they can and spend as little as possible.

Q.—Take for instance the case of pumping from wells—would they not require advice in the first instance as to the size of wells which it is possible to put down and the amount of power which is required for pumping and the adjustment of the pumps to a proper speed and so on ? Would it not be of assistance to them to have a man locally to do all that for them ?—*A.*—I agree that in a matter of this kind advice is necessary.

Q.—When they get the thing started, do you think that they are capable of working with a reasonable degree of efficiency or do you think the advice would have to be periodical in that case ?—*A.*—I think advice should certainly be periodical. Many people who put down tube-wells and pumps have no idea as to why there may be any falling-off in efficiency. I have known cases for instance where centrifugal pumps have been running in connection with a well and after a while the delivery of water has fallen off, and they have sought my opinion on the matter, but it simply proved to be a case of leakage at a gland or joint letting air in, and consequently not working well. I have found such instances where one would have thought the people in charge would have realised the cause.

Q.—Your point is, I suppose, they won't take advice unless the things get really into a bad state ?—*A.*—That is generally the case. They let the thing go until it is difficult to repair, then they seek advice.

Sir D. J. Tata.—*Q.*—Is it because the man in charge is not sufficiently capable ? Surely a man who works a pump ought to know ?—*A.*—It is rather difficult to say. In my own workshops I have men who are supposed to be successful in the use of machines and yet I find, although they know that a certain operation is necessary, they will omit to do it until the difficulty arises.

Mr. C. E. Low.—*Q.*—You say "Relief from taxation would help a struggling concern, and I would certainly stop municipalities placing special taxes on engines or other machinery, which in some cases is now done." What class of taxes do you refer to? You mean the octroi which they charge on machinery imported into a municipality?—*A.*—Yes, this kind of thing is charged not only on machinery, but annual taxes put on in some cases.

Q.—On what class of machinery?—*A.*—On such things as engine and boilers. You must have heard there is actually a municipal tax on steam-engines.

Q.—As regards octroi too, the octroi on imported machines levied by municipalities is not a heavy item?—*A.*—That is a matter that I have not enquired into; it does not affect me.

Q.—But your impression is that that is being done, and that it presses undesirably on the industries?—*A.*—That is the opinion I have.

Q.—You speak about the difficulty of handing over a pioneer factory to ordinary management, and you say—"At a suitable stage in its development it could be turned into a public company in which Government could hold shares and when that in turn is a commercial success it could withdraw by arrangement as in the previous case." I think you propose that Government, practically speaking, should put the thing on the market as a limited liability company and sell shares—is that your idea?—*A.*—I would rather put it in this way. I make a difference in my mind between what you call a demonstration factory and a pioneer factory—a demonstration factory being one in which you merely demonstrate a process without reference to its commercial issues or rather the possibility of its commercial success; a pioneer factory takes the commercial element into consideration.

Q.—Your idea about pioneer and demonstration factories is something rather different from ours. We mean by a pioneer factory a factory which starts an industry with a new process, new at any rate locally, and runs the thing to a commercial success?—*A.*—Quite so.

Q.—A demonstration factory simply demonstrates something already existing either locally or in a distant place, in order to bring it home to the minds of the people, but in any case on a commercial scale. There is a difference between experimental and demonstration work as in agriculture; that is what we have in our mind?—*A.*—My idea is quite the same as yours, with perhaps the difference that I look upon a demonstration factory merely as one demonstrating a process without reference to its commercial success.

Q.—We are rather on the other track. A pioneer factory involves both demonstration and experiment, but in any case you should run the factory until it can be shown that it can be run as a commercial success. Now you propose to establish an independent concern in which Government should take a share—would you propose to float the thing as a company and let the public buy shares?—*A.*—What I would propose would be analogous to gradual withdrawal, the idea being that the factory is not primarily started for direct profit of Government, but merely to prove the process a success, and when success is achieved, shares should be created and part placed in the hands of the public, and then as it proves commercially successful, Government would gradually release a portion of its shares allowing them to be taken up by existing shareholders or by others who wish to buy.

Q.—I suppose the idea is partly to get over the difficulty which exists in this way, that in practice any limited company, especially any industrial company, is really started by a group, it has to command mutual connections in other industries which enables them to work more or less with profit from the start, and practically this group of persons puts the company on the market and the shareholders are simply those who come in—you have here a very close organization ready before the company starts, but if you simply put a proposition on the market as a limited liability company, very likely you would not have your central organization?—*A.*—I think I might explain what the procedure in western countries would probably be—an industrial concern would be started by a syndicate of men, each would put money into it, and they would develop an industry to a certain point; they would then invite public subscriptions probably holding a certain proportion of the shares themselves; but they require to have their financial organisation over a broad basis.

Q.—And it would create public confidence in the syndicate?—*A.*—But that public confidence would not grow if that original syndicate proposed at once to withdraw entirely; so I would not suggest, when Government is concerned in a pioneer industry, that it should at once withdraw by selling it right out to some commercial concern, but rather that it should hold a proportion of the shares and gradually withdraw.

Q.—But you leave the Government responsible for building up in the concern a group of persons who would be competent to exercise real control and responsibility?—*A.*—A successful concern would attract people of ability.

Q.—Speaking of tube-wells you say "Their use has developed to the stage which indicates that a new industry, that of manufacturing the necessary parts, making borings in the ground and installing the necessary machinery has become firmly established and is likely to develop to a large extent." Are the Agricultural Department taking up the question of tubing at present?—*A.*—They are doing a little in that way. and commercial concerns are also doing something.

Q.—Are there commercial concerns putting down borings—people who sell pumps?—*A.*—There are concerns who put down whole installations.

Q.—And do boring also?—*A.*—Yes.

Q.—Do they get a fair amount of business? I am not speaking of war time, there is difficulty of getting raw materials, but before the war?—*A.*—Those engaged in the business get all the work they can handle.

Q.—Referring again to your experience of the apprenticeship system, you say "Under this scheme six or eight apprentices did pass through the shops and some of the most successful of them were also given drawing office training and they have turned out to be good men." What class of men were they—were they of the educated type?—*A.* Most of them were not. They were sons of *mistris*, some of them *mistris* in our own department who came and passed through apprenticeships in this way.

Q.—What sort of job do they rise to?—*A.*—Most of them have now left me. I heard from one about three days ago that he is now in charge of a flour mill.

Q.—Getting about how much?—*A.*—Probably about Rs. 200 a month.

Q.—Have you experienced much difficulty in training Indians as shop foremen and chargemen? Have you any Indians in such posts in your work?—*A.*—I have several.

Q.—What pay are they getting?—*A.*—I am speaking of one of them who is the most successful man of the kind that I have had to do with. He was originally an ordinary *lohar* and when I first employed him 13 years ago his wages were 25 rupees a month, he learnt English in his own time and also drawing.

Q.—Where, in what sort of school?—*A.*—By private tuition, and he has gradually grown up in our employment until he has done very good work for us and he is now drawing 150 rupees a month.

Q.—Is he of the type of man, for instance, that is foreman in railway workshops?—*A.*—Many of the foremen in railway workshops of course are Europeans or of European descent.

Q.—Practically all of them. But now, what would be the difference between a man like what you were describing and the European shop foreman as regards capacity for keeping work going?—*A.*—I would place the difference in this way—he would lack a sufficiently broad technical knowledge. When new work is given to him it would always be necessary to give him very clear explanations as to how that work has to be done. I question whether he would have sufficiently broad knowledge to be able to take up and do new work in the best way.

Q.—Is he all right in controlling labour?—*A.*—He is quite successful.

Q.—Then what is your idea in regard to training men as foremen and chargemen; how do you think that kind of man can be evolved?—*A.*—I have mentioned in my note that I think such a man could only be produced through a species of apprenticeship.

Q.—Of course you will find this difficulty that you cannot keep them?—*A.*—That is so. The demand for men of experience is great and when a man is going through the shops, as soon as he develops up to a certain point he is often enticed away by others.

Q.—Then in any case practical training must precede anything else; he must start with practical training?—*A.*—Yes.

Q.—Under shop conditions?—*A.*—I gather that in putting that question you have in your mind the alternative of a species of school training?

Q.—I do not think we have that idea, but some people have it; that has been put before us on several occasions, starting school training first of all and then turning the man out into the works?—*A.*—I do not think that would be a great success. I have had a very considerable amount of experience in connection both with technical colleges

and with workshops, and it has been my experience that the best men are evolved by an initial training in the workshop followed by technological training. If you take the men who are going through the so-called technical training, they don't realise what they are training for; they don't understand the training and much of it gets lost.

Q.—Would you approve of holding technical classes in connection with Government or railway shops to deal with apprentices as they qualify for it?—*A.*—I don't know whether I would speak of men connected with a particular shop, but I certainly think that if the men will attend technical classes in addition to working in the shops it is the best way to train them.

Q.—If you get a very large work like a big railway works which gives an amply sufficient basis for a small technical institute, would you be prepared to see suitable men get occasional afternoons off to attend the technical classes?—*A.*—It will probably help very much in the training.

Q.—And you think in the case of very large works of that sort such a technical institute to train apprentices would be promising?—*A.*—Yes, if properly run.

Q.—In the case of smaller works as you seem to indicate it would be impracticable?—*A.*—Because they are too small. May I make a further observation in regard to this technical training. The great fear that attaches to it is that the men's minds will develop to the point where they conceive that they are fitted for something different from workshop work, and that they should be given only some highly-paid job in which there is no manual work. The tendency is not to make them better workmen, but make them aspire to something which they are really not fitted for.

Q.—But under this scheme the student will be fully committed to shop conditions before he begins to get any training?—*A.*—Yes.

Q.—You go on to speak of Patent Laws. What is it that you object to specially, to the initial fees or to the annual recurring fees?—*A.*—Not the initial fees but the maintenance fees.

Q.—That is necessary, is it not, to keep out useless applications?—*A.*—We must have some fee in the first instance, but as I have pointed out recurring fees may press very heavily upon the poor man and in countries where I understand there are no such recurring fees, the Patent Laws have been of very great help to industries.

Q.—You speak about these rules regarding employees of the Government of India. There are corresponding rules I dare say with reference to officers employed under them in England by which the Government have a right on a patent when taken out by Government officers. In practice, do Government make a hard bargain with the man in such cases?—*A.*—I have mentioned that in my own note. My experience is that it is wholly favourable to Government.

Q.—We have had evidence the other way too, namely, that Government are really liberal?—*A.*—My experience is that although I have produced many inventions hitherto, Government has taken from me the patents and has not returned me anything.

Q.—In cases where a man has evolved his invention from the facilities and experience he obtains under Government, surely Government have the right to hold an option on the patent like any private firm would?—*A.*—Government does not employ its officers as inventors. Many men with equal facilities and experience fail to produce useful inventions, thus if it is to be conceded that Government has a right to the inventions produced by its officers, it penalises those with inventive ability. I have produced many inventions which are being used by Government and for which I have received no consideration.

Q.—Did you make any representation, or ask for any relief?—*A.*—I have made representations.

Q.—And did they give any reason why they should not give you any relief or purchase the patents from you?—*A.*—The response that I got was that Government was entitled to use my patents as I am a Government servant, and that I must look for my remuneration from other sources. This matter, I might point out, was once carried to the extent that where Government purchased goods made according to my patents from a British firm to whom I had granted licenses, under the English Patent Law, the payment to me of the royalties was stopped.

Q.—That is to say, they invoiced the goods less the royalty charges?—*A.*—Yes, and I appealed against that action and ultimately it was cancelled. I appealed on the ground that that firm was not manufacturing under the Indian Patent Law, but British.

Q.—Of course you realise, don't you, that in cases where a man is given certain facilities, say charge of establishments, or gets a contract for a certain class of work, there is no doubt he is making use not only of his own brains, but also of those facilities which arise out of his employment under Government?—*A.*—Not wholly, he would have the same facilities in other employments.

Q.—Then in the case of other employments, does not the employer usually put himself in a specially favourable position in respect of patents taken out by his employees?—*A.*—I am not quite certain of my ground, but I believe that no employer now under the existing Patent Laws may claim an employee's patent rights.

Q.—Quite, legally I grant you, but if I remember rightly, I was told for instance that motor manufacturers particularly as a rule make an arrangement with their employees to take over patents from them?—*A.*—Usually the attitude is that the employing firm arranges with the employee that the patent shall be considered a joint one, and that they shall share accordingly.

Q.—You speak about the housing of employees, you say you would like to see "associated with every factory enforced conditions as regards proper habitations for factory hands." Are you aware of any other country where they compel employers to house their labour?—*A.*—I am not aware of any other country.

Q.—Then you realise, don't you, that it would be rather a strong step to introduce that in India?—*A.*—It would.

Q.—What are the grounds on which you would justify that?—*A.*—On the ground that I consider the conditions in India are quite different to those obtaining in other countries. The Indian workman, it seems to me, is more likely to be preyed upon in matters oft his kind.

Q.—Because he lacks organisation, and because of his own personal peculiarities, helplessness and so on?—*A.*—Because of his own peculiarities, peculiarities arising out of the conditions of his life.

Q.—Do you have anything approaching a provident fund for the workmen in your workshops?—*A.*—No. I have actually talked to the men on the subject and they have expressed a desire for something of the kind, but as yet I have not been able to bring that to the point of definite proposals.

Sir F. H. Stewart.—*Q.*—Presumably, there are a number of branches of this central workshop of which you are the superintendent:. Is it under the Irrigation Department?—*A.*—It is under the Irrigation Department, it is within its organisation.

Q.—How many employees are there?—*A.*—It varies: our present establishment is about four to five hundred—it may run up to 1,000 at times.

Q.—Have you any apprenticeship system now?—*A.*—No.

Q.—You speak of one which you tried but it was objected to by the Accountant-General. What was his objection, that you took deposits from them?—*A.*—The objection was that the arrangement was not authorised, and, doubtless, his objection was chiefly associated with the taking of deposits from them.

Q.—Did you carry the matter any further, or did you just drop it?—*A.*—The matter arose when I was away on leave, and the officer officiating simply dropped the matter; when I returned I decided not to revive it, but I was very greatly disappointed.

Q.—You think that an initial deposit is the essential part of such a scheme?—*A.* I consider it absolutely necessary in order to make the men carry out their obligations.

Q.—With reference to your suggestion about licenses, you would not allow a man to engage in trade without a special license, is that the effect of your suggestion? Could you explain it further?—*A.*—I was particularly mentioning that with reference to my suggestion for industrial settlements, with a view to raising the moral tone of the workmen.

Q.—But supposing in the end they do not conform to the regulations, what alternative do you propose?—*A.*—Simply require them to withdraw from the settlement. There would need to be rules associated with the settlement to which they must conform; if they cannot conform, they will have the alternative of withdrawing from it.

Q.—Similarly, if a man did not do the amount of work allotted?—*A.*—Certainly, if you are providing that man with machinery and appliances and so on, and as that particular workshop would be as it were a tooth in the wheel, if that one fails then the rest suffer.

Q.—Do you really think this is at all feasible?—*A.*—I would not otherwise have suggested it.

Q.—Then you say with reference to the people of this province, "The people do not show any aptitude for that branch of knowledge, that is to say, mechanical." That is rather at variance with the experience of others, and with other evidence tendered to us?—*A.*—I think that it is probably because many people consider manual aptitude as mechanical aptitude. I would say that the workmen generally have a certain amount of manual aptitude, but not mechanical aptitude.

Q.—Is that not due to want of mechanical training?—*A.*—Perhaps I might explain what I mean by this. I find very few men able to take an idea in embryo and work it out to its issue.

Q.—What about students from these industrial schools and colleges? You say the majority of them are spoilt by their training; would that apply to the College of Engineering at Roorkee for instance?—*A.*—I have not had men from that college, that is rather a Civil Engineering College.

Q.—How would you compare the productive capacity of a good workman here as compared with an English workman? Would you say he can do half as much or as much or twice as much?—*A.*—I would practically place it at the difference between the rates of remuneration.

Q.—That is to say, if that English workman gets twice as much pay, he does twice as much?—*A.*—Actually it is more than that, what an English workman does in a day the Indian workman does in a week.

Sir Dorabji Tata.—*Q.*—In respect to manual labour or mechanical skill?—*A.*—The kind of labour that you have in a manufactory.

Q.—Imported skilled labour, is that what you mean?—*A.*—Skilled labour certainly. Even if you take such a simple thing as hammering at a forge, the difference is striking.

Sir F. H. Stewart.—*Q.*—As regards technical aid to industries you refer to the case of Government medical experts; are you aware there is in many quarters very severe criticism of that practice?—*A.*—Probably the criticism is by other interested persons.

Q.—Anyhow you think it a good case to quote as an argument for allowing Government servants to take up practice in private work: in your case it would be consulting engineering?—*A.*—Yes.

Sir R. N. Mookerjee.—*Q.*—Don't you think it would interfere with your own work?—*A.*—I stated in my note "provided that they do not allow it to affect their duties detrimentally."

Sir Francis Stewart.—*Q.*—Who is going to be the judge?—*A.*—Who is to judge if a man has ability or capacity now?

Q.—You mean Government would have to judge?—*A.*—Certainly.

Q.—Are you allowed to do any outside work in certain circumstances with the permission of Government?—*A.*—At one time I applied to Government for permission to do consulting work, and it was refused.

Q.—You applied for a general permission?—*A.*—Yes, to do consulting work generally.

Q.—In cases where people come to you for advice on particular matters, can you not apply to Government and ask for permission?—*A.*—I know of instances where men have been told that they may do private work provided that they return half the fee to Government. Rather than do that I would give my advice free.

Q.—Is there in your opinion any scope for private consulting engineers in this province?—*A.*—I doubt whether there is a sufficiently broad field in the Punjab at the present time. My point here was that whereas there are struggling industries at the present time which need expert advice, there is a certain amount of expert knowledge available in this country which is shut off from those who need it.

Q.—If that expert advice is given by Government servants would it be right that the result of any experiments that they may make in connection with their advice should be published for the general good at once in the interests of others engaged in that particular business at that time?—*A.*—I do not think it will be quite fair to publish the results of investigations into a matter which particularly concerns one firm. For instance, supposing I were a consulting engineer at home and a firm called me in and asked my opinion on some process of manufacture, they certainly would not be willing for me to write to a paper on that particular process with a view to publishing it, nor should it be done here.

Q.—But the hypothesis out here would be that being a Government and therefore a public servant the expert's services should be at the disposal of the public?—*A.*—Yes, but there will be no purpose gained in creating conditions round it, so that people would certainly not seek advice because they would be penalised by having the process published.

Q.—Do you think they would be withholding the information from the public, say, for a period of one or two years or something of that sort?—*A.*—I think it is a matter in which the nature of the circumstances should be taken into consideration.

Q.—With reference to training abroad, you don't very much like the scholarship system as it exists now?—*A.*—From what little I have seen I am inclined to think it is a failure.

Q.—Would you like to see scholars thoroughly trained as practical men before they go abroad?—*A.*—I think it would be a better procedure to bring the system of training to this country rather than send men from this country to get it.

Sir Fazulbhoy Currimbhoy.—*Q.*—In the first three or four pages of your note you describe the methods of English industries. Do you want India to follow on that line?—*A.*—I think I have made it clear in my note that there are certain social disabilities in connection with the development of large factories in this country, and that I should like to see India not going in for it.

Q.—India ought not to go in for any big factories, is that what you mean?—*A.* I have said in my note that doubtless there are some industries which could not be developed without big factories.

Q.—Just like steel industries?—*A.*—Certainly, but that where it is possible to develop them without the factory by all means do so.

Q.—How are the people to be educated in industries and other technical matters? We want big colleges at different centres, do we not?—*A.*—It is useless to endeavour to teach them to run before they can walk. I would not start with big colleges; I would start with workshop training and technical classes in connection therewith, and leave the colleges until afterwards.

Q.—And about research work, you also don't want research institutes?—*A.*—I see no object in that at present.

Q.—Have you watched the development of Germany and Japan during the last 50 years?—*A.*—To a certain extent I have.

Q.—And their educational institutions?—*A.*—To a certain extent.

Q.—And do you think India will be able to compete with other countries who are fast advancing by going on so slowly? 'Do you believe in that?—*A.*—India is a different country to those others; you are starting here with people with quite different aptitudes, you have to gradually change these aptitudes.

Q.—Do you think that Indians are not at present fit to attain to any higher positions in technical matters? Is that your view?—*A.*—I do not say so.

Q.—Don't you think that technical institutes and colleges should be established so that people who are trained in those institutions may acquire higher positions in the industries of the country?—*A.*—I say that progress must be made on gradual lines.

Q.—Have you seen the Technical Institute in Bombay?—*A.*—No, I have not.

Q.—Have you had experience of the boys turned out from that institute?—*A.* I have employed one boy from there.

Q.—In what line, engineering? Are you quite satisfied with his work and aptitude, or are you not?—*A.*—I am satisfied to this extent that if those boys are content to go through a thorough workshop training, afterwards they might do well; but the usual tendency of this training is to make them discontented with workshop work, that is to say with manual employment.

Q.—Because the training is defective—you want big workshops attached to these big institutions, do you not?—*A.*—I do not.

Q.—If big schools or institutions are attached to big workshops, or established in big industrial centres, the boys can get an opportunity to go and see the works and learn the work also at the same time?—*A.*—I agree that workshop and technical training should go hand in hand; that is the best thing.

Q.—Then you agree that they ought to be started on that line for teaching Indians?—*A.*—Yes, they should be associated.

Q.—Would this apply to the higher grades also?—*A.*—You cannot begin with the higher grade, you must begin with the lower.

Q.—There are lower grades as well as higher grades?—*A.*—When you have given man a thoroughly good grounding in workshop practice and in the elements of technology

if he has ability in him he will go further. On the other hand if you take a man and put him into a college and give him much book learning you may create in him the impression that because he has passed certain examinations he is straight away fitted for high posts, and thus spoil him.

Q.—He must have good grounding in workshops as in Europe; if he is given the same chance as in Europe for workshop training, do you not think he may be able to do the same sort of work?—*A.*—I have seen many a man in Europe obtain his workshop training by apprenticeship in the shops and by attending evening classes in technology who has risen to very high positions in the technical world.

Q.—But here if the same training is available, they will have the same chance, is it not?—*A.*—Yes.

Q.—So technical education and scientific education ought to be imparted on the proper lines?—*A.*—Provided you don't make a fetish of what you call a college or university or something of that kind.

Q.—Then about the cotton trade of Lancashire, you know things are quite different here from Lancashire; you see in Lancashire the difficulty is that of obtaining cotton; then they have got different divisions, they have got the spinning factory, then the weaving factory and so on, here they are all combined just like America and other places, and their work is quite successful or even better; so you cannot have the same standards everywhere?—*A.*—My purpose in putting that forward was to indicate the lines upon which industries have developed with a view to examining those lines to see whether they would point out to us the direction in which to move.

Q.—But we have to take other countries also as our example, countries like America?—*A.*—It is well that we should speak about that which we know. I have lived in Lancashire in the middle of the cotton industry; I have lived in Birmingham and other places. I only speak of those places of which I have personal knowledge.

Q.—Then about hydro-electric power, do you know anything about the schemes of the Punjab Government about hydro-electric power?—*A.*—Most of the hydro-electric power schemes that have been handled by the Punjab Government have come before me.

Q.—Do you think the Punjab schemes are commercially possible?—*A.*—That is speaking broadly?

Q.—Can you develop large power here? Schemes have come to you, have they not?—*A.*—There are cases where we can develop very considerable power.

Q.—How much?—*A.*—In Amritsar here we have a scheme for a thousand horse-power; I know of other places where we can develop 4 or 5 thousand horse-power.

Q.—You say "Unfortunately a ruling of the Secretary of State some years ago prevented the Indian Government adopting such methods." What methods do you refer to there?—*A.*—I think it was with reference to pioneer factories; that was after the experience of the Madras case, the aluminium case.

Q.—You say "In the matter of financial aid to enterprises, I am of opinion that grants-in-aid, bounties and subsidies are unsound." Do you know that the French, Japanese and German industries owe their origin to these grants-in-aid and subsidies? Their steamship companies and other bigconcerns havebeen developed by this system of bounties?—*A.*—I believe a great deal has been done in that way, but it does not in any way appeal to me. I don't like what one might call wet-nursing.

Q.—But supposing we want to start a shipbuilding industry in India; other countries have developed it greatly and India cannot compete with them at present unless Government helps to start the shipbuilding industry in the country; in that case Government must give grants-in-aid or subsidies to start the industry in the beginning until it can stand on its own legs. Do you not think in that case Government should subsidise?—*A.*—I do not know that I would make my remarks absolutely general. My remark was made with particular reference to the development of such industries as could possibly be established in the Punjab.

Q.—Suppose in the Punjab many people are willing to start industries and they can organise successfully if they can get aid from Government, do you think in that case Government ought to help by having a staff of experts and giving expert advice? If there are experts who can say that a certain scheme is good and canbe worked with profit, don't you think that Government should give financial aid to that industry?—*A.*—I think that is a question on which I had better not express any opinion.

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Q.—Then you say " Relief from taxation would help a struggling concern and I would certainly stop municipalities placing special taxes on engines or other machinery which in some cases is now done." Where ? Is it done in the Punjab ? Are the engines being taxed here ?—*A.*—I have stated that it is done in Amritsar.

Q.—Then speaking of Government policy in pioneering industries, you say " When the risk is too great to justify Government following this course of inviting outside capital to participate, it could reasonably establish such a concern accepting the whole risk itself " ?—*A.*—My point there is that I object to the general idea of trying to put the risk on somebody else's shoulders.

Q.—You mean that Government should take the risk ?—*A.*—If it wants to get the thing done, certainly. There are many instances where there is good reason to believe that an industry can be developed, but that probably for several years to come it will have to go through a development period before it can reach success ; in that case I think that the risk might reasonably be borne by the Government, and when it has been developed to the point of success then it should bring in private enterprise.

Q.—You say speaking of your apprenticeship system, " Under this scheme, however, six or eight apprentices did pass through the shops and some of the most successful of them were also given drawing office training and they have turned out to be good men." Where are these men employed now ?—*A.*—I have lost sight of most of them.

Q.—Do you think that employers of labour should provide habitations for the hands employed under them ? Do you want them to build houses ?—*A.*—I would like to see satisfactory conditions of life made for the employees.

Q.—That is, you would give them good accommodation to live in, is that only what you want ?—*A.*—The tendency where a factory grows up is for the surrounding residential buildings to become congested, for the residential conditions to become insanitary, and also for the people in the neighbourhood to prey upon the factory employees.

Q.—Do you refer to the *bunnias* and money-lenders ?—*A.*—Certainly. I have enquired from many of the men and a large proportion of them live in a constant state of debt.

Q.—Do you think there ought to be co-operative societies amongst these workmen ? *A.*—I think so. I think that is the direction in which it can be done. I think for instance you will find when you go to the Dhariwal Mills that a great deal has been done on these lines ; they provide residences for their workmen and they also have a co-operative society working.

Q.—If they want their employees to go and stay there, they have to provide accommodation, is it not ? If they start a factory where they have not got any man to work, they must provide accommodation for the men if they go there, or else they cannot work the factory. Is that not so ?—*A.*—Yes, but if it can be done successfully in one case it can be done in others also.

Q.—What percentage of the men employed in a factory would you like to be compulsorily accommodated under Government legislation ?—*A.*—I do not think it is necessary to particularise in that way.

Sir D. J. Tata.—*Q.*—I will just continue where Sir Fazulbhoy left off on the question of the housing of operatives. Is it not the fact that there is great difficulty in dealing with this question owing to the long-established habits of these people ? If left to themselves, they would not prefer those healthy surroundings that you suggest ; they might perhaps be content with more unhealthy surroundings if cheaper ? Employers would like to see them occupying healthy buildings. But do you think it is possible to do anything when the habits of the people ingrained for centuries come in the way of this sort of welfare work, if I may so call it ?—*A.*—I think that is rather looking for objections.

Q.—In your instance of Dhariwal, it is possible for a new industry starting in a new place to begin by building healthy quarters for the men. But if you are starting in a congested city where your factory is in the heart of a town, the labourers naturally want to live as near as possible to the factory so as not to have to walk long distances to and from their quarters. In a town, however, the rents are naturally higher, and the value of land is greater, and they cannot afford to pay big rents for sanitary dwellings such as their employer himself would like for them. Consequently, they go to these wretched hovels in order to pay a lower rent ? They are not men who have been brought up to appreciate conditions of hygienic living, so they don't mind where they live. It is all due to want of education, is it not so ?—*A.*—In reply, I would say that in the middle of a congested area a large factory should not be started.

Q.—But if the factory is in a town there will always be this difficulty. Where, however, the factory is placed in a locality where the conditions of life are much better and where land is easily available, don't you think it is easier to house the operatives than it would be in a town?—*A.*—That points to the need for control as to where such a factory should be planted.

Q.—In answer to Sir Fazulbhoy with regard to training abroad, you said that the men should not be sent abroad. Do you think that they might be sent at a later stage? —*A.* I am afraid that the training obtained abroad is not so complete as you would expect.

Q.—It may be so at the present time but when industries are well established in this country and when we progress and reach a higher stage of development, would not training abroad be necessary there? Even in Europe men who go in for certain industries go, for instance, to Germany, to Italy, to Switzerland and other places to be trained in their particular branches and to get the extra knowledge necessary which they don't get at home?—*A.*—I would leave that to individual initiative.

Q.—That is true. But still there would be advantages in training abroad later on, if not in the beginning. I agree with you that perhaps in the first instance they are not ripe for being sent abroad; but don't you think that after they have been trained in this country up to a certain stage, if scholarships are given to these men to go abroad and acquire a final polish in their work, it would be of some use?—*A.*—Certainly, broadened experience is an advantage, but my remark with regard to sending men abroad was with reference to the initial training; and you find that generally speaking when they do go abroad they enter some school or college, pass through its course and return to this country with the belief that they are fully experienced, when they really are not.

Q.—That is the fault of the training. It is not their own fault. If they get the proper kind of training, there would not be this defect?—*A.*—That is the great difficulty.

Q.—Talking about this training you must go back to Japan. Do you know how Japan developed her industries by sending young men abroad to be trained? The Japanese developed all their trades and industries simply by sending numbers of their young men to foreign countries to be trained in the various industries which they are now able to carry on independent of foreign help?—*A.*—In making such comparisons we should, I think, consider on whose initiative they did this.

Q.—On whose initiative was it done in Japan?—*A.*—It was on the initiative of the Japanese people I believe.

Q.—That is to say, the Japanese Government. In the same way don't you think the Government of this country must identify itself with the people of this country?—*A.* —Yes.

Q.—Now in connection with this, you said in answer to Sir Fazulbhoy that conditions were different in Japan. That is true. But Japan about 50 or 60 years ago was even in a worse condition than India is now. Within this time she has practically educated herself up to the position that she is occupying now. At that time her people were very backward except in the artistic industries in which they were very far advanced?—*A.*—I always think that the best men are produced by those who have to go through the mill.

Q.—Of all the things that go for developing industries, such as capital, labour, raw material, etc., which do you think is the most essential, technical skill, or capital, or raw material?—*A.*—Each is dependent upon the other.

Q.—I speak specially with reference to what people say about the development of industries, say in the Punjab. Don't you think that technical skill is the one thing essential that ought to be imparted first? You have labour; you have certain amount of raw material everywhere; and capital is always available. Is not technical skill the most important thing here?—*A.*—You certainly cannot develop any industry without sufficient expert guidance in the way of technical knowledge.

Q.—Guidance, but at the same time skill in the workmen too who are to carry on the work?—*A.*—If you have guidance, any lack of skill can largely be discounted.

Q.—What is the guidance for, to give skill? Is it not?—*A.*—The question depends upon how you visualise this.

Q.—Speaking about the cottage system of industries which you would introduce, you say: "The advantage of such a system is that every man with initiative and energy may be his own master and work such hours and at such speed as he may choose. He may also be assisted by the members of his family who thus learn the details of his trade. Such a system calls for certain mastermen who will draw together the product of these small makers, have it completed, etc., etc." Now, are not all the big trades in America

developed by a system of standardising the parts, and manufacturing them in large quantities; and any system such as you propose can never hope to compete against the large factory system?—*A.*—I do not agree.

Q.—If a man works in the midst of his family, the family can help him. One member may do one part, and another may do another. That is all very well in the beginning; but do you think you can develop large industries by such system as they do, for instance, in America? They turn out for example watches as cheap as 5 shillings, simply because every part is standardised and they make them by the million, and it is all turned out on a factory scale, every part being separately made and put together?—*A.*—Similar watches are made in Switzerland largely on the cottage system.

Q.—But at what price are they put on the market?—*A.*—I have not any exact knowledge. The industry there is flourishing.

Q.—You say, "The mere formation of technological classes will not establish industry, although as an adjunct to an established trade it is most useful in assisting its further development. Such classes without the established industry are but a waste of money and effort, and creators of disappointment and discontent." But to get an industry developed on a large scale, don't you acknowledge that this sort of technical instruction is absolutely necessary to develop an industry to the utmost, and bring it to a state of perfection and that without this special skill no trade can be developed to a very high standard? Take, for instance, such things as cycle-making, and the state of perfection it has reached, for example, in Coventry. Unless you introduced technical institutions where men could be trained to carry on research work, by starting a small factory to develop it to its highest point, do you think such perfection can be reached? In the course of the development of an industry a man may invent a new process, a new method, and a technical institute would be of great advantage. We here may have reached that stage or may not reach that stage for some time; but ultimately, in the end, would not large technical research institutes be of very great advantage in this country?—*A.*—Large technical institutions and research institutes have their place, but I do not think that position comes in before industries are established.

Q.—Well, I will give you one instance. There is a research institute in Bangalore. The Mysore Government had a large business in sandal-wood which they exported for making oil. Taking advantage of that institute in Bangalore they asked the institute if it was not possible for them to make sandal-wood oil in this country. The institute devoted its attention to this problem, with the result that the Mysore Government is now making sandal-wood oil in the Mysore territory. Here is the case of a research institute which has done very excellent work?—*A.*—A very excellent one. Research institutes manned by experts have their place, for they can carry out investigations that may influence the establishment of new or the development of old industries. I differentiate research institutes and technical colleges and attach greater value to the former for the purpose in view. The main thing is to get industries established, and research can then help in their development. Without the industries there are no trained artizans and managers to convert the results of research into practical commercial industry.

Hon'ble Mr. H. J. Maynard.—*Q.*—I think you mentioned some municipal taxation on engines and machinery. There is an octroi of 3 pies in the rupee on the value of machinery, is that what you referred to?—*A.*—I have no knowledge of this subject.

Q.—When you refer to a tax on some engines, you don't know actually the amount of that?—*A.*—I don't know.

Q.—It is a license tax simply. I only wanted to know whether it is the same or something different. I am told there is a license-tax of 5 rupees or 10 rupees according as the engine is of 20 horse-power or more?—*A.*—I only know that such a tax is actually charged, that is, that a tax is charged on machinery.

Sir R. N. Mookerjee.—*Q.*—With reference to the apprenticeship system, do you pay the apprentices anything after the first year's work, if they continue for a second and third year?—*A.*—I pay them from the beginning.

Q.—Do you pay them their entire dues monthly or you keep a certain portion and pay at the end of their apprenticeship?—*A.*—I pay them monthly.

Q.—You asked for a 100 rupees deposit and the Accountant-General did not pass it, and that was your difficulty. I understand that in the Eastern Bengal Railway workshops at Kanchrapara they don't take any initial deposit, but they keep back a portion of the pay and put it in the Post Office to earn interest, and if anyone leaves within the prescribed time he forfeits that amount. If they don't leave till the end of their apprenticeship they get a decent amount of money, 400 or 500 rupees, according to their merit

This system will necessarily obviate this difficulty of yours, or in other words that would render Government sanction unnecessary as you will not have to ask for any deposit ?—*A.*—It becomes practical'y a deposit.

Q.—The Superintendent of the Kanchrapara Workshops gave evidence before us and told us that the system was working well. I am only suggesting whether that might not meet with your difficulty. We have been told in other places also that the principal difficulty is that these apprentices don't remain the full period, but if you pay them only half of their wages and keep back the other half to be paid at the end of their terms, then they might willingly stay to complete their terms ?—*A.*—As the money would remain in deposit, the objection could probably be made.

Q.—Then about your fee for private consulting practice, do you think that when Government told the officer you referred to, that they would allow him only half the fee earned and that the other half should be returned to Government, it was not fair to both parties ? Take for instance your case as an example, you are a Government servant, you get a certain amount of pay from Government monthly, you have a pension, you have perhaps a provident fund, and then you give a certain portion of your time to certain consulting work somewhere, you accept a certain fee, and Government asks you to share the fee half to yourself and half to Government. Is it not a very fair arrangement ?—*A.* I do not think that I would agree to any such arrangement.

Q.—But can you state any instance where a private company allowed their engineers to practise as consulting engineers without sharing his fee with his proprietor ?—*A.*—If a man is employed by a private concern, he is expected to put in certain hours per day at his work or in his office, and outside that office he does as he likes.

Q.—My experience is not what you state. Can you mention any firm of engineers or architects which allows its expert employee to take up private practice as he likes without any condition ?—*A.*—My commercial experience has been in England, where I have known men in employment prepare designs and give expert advice outside office hours and earn fees thereby.

DHARIWAL.

WITNESS No. 388.

MR. J. W. ARMSTRONG, *Manager, The New Egerton Woollen Mills Company, Limited.*

WRITTEN EVIDENCE.

Financial aid to industrial enterprises.

1. The opinion appears to be very widely held that without direct Government aid the industries of India cannot be further developed, and those who cling most tenaciously to this theory and press clamorously for its full adoption generally mean, when all superfluities are removed, that Government should bear in one form or other the financial burden of starting new or developing existing industries. In other words, that the general tax-payer should contribute to the income of any who profess to have hold of a sound proposition but can neither back it themselves nor persuade others to do so.

2. The progress already made in establishing in India industries run on modern lines proves to my mind conclusively that a sound scheme backed by trusted men is not likely at any time to fail for want of capital. And no amount of financial support which Government could grant in order to bolster up private enterprises would be a substitute for the elements of character without which business anywhere cannot prosper. If those who are in touch at every point with the promoters of schemes for starting businesses refuse to budge from their position of distrust, or " timidity," as it is euphemistically termed, then it is extremely doubtful whether a dole taken from the pocket of the general tax-payer and called Government support would dissipate the existing lack of confidence. And no step should be taken by Government which would retard the day when the bulk of the people would become more self-reliant and mutually trustful.

3. Government should in my opinion be particularly chary of granting any direct financial aid whatsoever to individual concerns or persons whether by grants-in-aid, guaranteed dividends, loans without interest, or exemption from taxation, unless it is abundantly clear that the industry to be helped is of national importance, such as for instance sugar manufacture may be claimed to be, and that Government authority is needed to harmonize conflicting interests. And in the case of industries which on first view it might seem advisable, in the interests of the community as a whole or at any rate a large section thereof, to assist financially through an existing or new enterprise then the prospects of success should be very carefully examined by the best experts obtainable and before any commitment be

entered into on behalf of the State the intention of Government to extend its aid should be publicly announced, and full particulars of the facts on which the decision had been based should also be published—these particulars to include the expert's analysis of the probable working costs and expected results. This would ensure that in addition to those who had propounded a particular scheme others equally interested might have the opportunity of putting their views before Government, and would help in preventing undue waste of public money as well as guarding against unfair competition—by means of Government aid—with existing private enterprise.

4. Government's connection with concerns partly or entirely financed by public money should be sufficiently intimate and authoritative as to ensure that the funds taken from the general tax-payer were being used for the clear well-defined purpose for which alone a grant could be justified. It should in such cases be in the power of Government to exercise some form of control over the purchase of raw materials ; ascertainment of real costs of manufacture ; the disposal rates of finished products ; the sanctioning of commissions paid to officers of the company ; and such like matters—the ruling principle to be to interfere as little as possible consistent with the protection of the interests of those whose money Government put into the venture.

Pioneer factories.

5. I do not think that any appreciable progress would follow the establishment of pioneer factories to be completely run under the ægis of Government. There could hardly be the same keenness in such factories as is necessary in order that a business might flourish. The aims and ambitions of those placed in charge would scarcely be the same as those which have actuated the men who have built up successful businesses, and who are assured of receiving the full reward of their own enterprise, perseverance and general business acumen. Dissipation of public funds would I consider be the chief result of the establishment of such factories.

6. If Government financial aid to industries be, as I hold it should be, strictly limited to such enterprises as are clearly in the interests of the community as a whole then it would I think follow that no limitations on Government aid should be imposed simply because of the fear of competing with an established external trade. If the intention of Government to assist a given industry were publicly announced then all those who might consider their interests prejudiced could place their position before Government, though in the original review of the industry to be assisted it would be one of the duties of the Government officials conducting the review to ascertain in what directions and to what extent Government action would conflict with existing interests and to propose methods for harmonizing same.

Cottage industries.

7. To develop cottage industries in agricultural districts the supply of hand-machines on the hire-purchase system might be adopted provided that the agency of Co-operative Societies, registered under the Act, or of some Government Department, be used for supplying the raw material needed for, and in the disposing of the products of, such machines. Cottage industries are, I understand, very greatly handicapped owing to the difficulty experienced by villagers in financing their very small operations except at exorbitant rates of interest, and the Sahukar who at present holds the village worker in the hollow of his hand would probably reap a still richer harvest if Government supplied hand machinery, and nothing further was done to assist the villager. Co-operative Societies are doing a most useful work in promoting the right spirit, and an extension of their activities in the way suggested would I believe be of decided advantage.

8. It is highly doubtful however whether any marked benefit of permanent value to the industries of the country will follow any propping up Government could undertake of the cottage industries of the country. As a means of supplementing the earnings of an agricultural community cottage industries ought to be supported wherever possible, but it seems unwise to imagine that they will, however well organised, succeed in placing the industries of the country on a firm basis.

Assistance in marketing products.

Commercial museums.

9. In my experience there is no great difficulty in the way of bringing saleable goods to the notice of the general public, and I doubt very much whether any appreciable increase in the volume of business done has followed the establishment of commercial museums. They are probably mostly used by the idle and curious to help pass leisure moments. To reach the consumer is not the hard task which, when he is reached, it is to persuade him that it is to his advantage to purchase an article at a rupee which will last him twelve months rather than one at eight annas which will only last quarter the time. The flooding of the Indian markets with cheap tawdry foreign goods, mostly the products of Austria and Germany, though of distinct advantage to the trading community, has not been an unmixed blessing to the country as a whole, as the development of the industries

of the country has no doubt been retarded thereby. The remedy of course lies not in attempting to imitate the inferior goods hitherto foisted on the public but in providing really sound articles at rates which the ordinary consumer can pay. And travelling exhibitions of such articles, made at recognised factories or by cottagers whose work was organised through Co-operative Societies, ought to be of utility to both producer and consumer.

Industrial exhibitions.

10. Industrial exhibitions such as those held at Lahore and Allahabad in recent years, though probably not productive of much service in the way of bringing buyer and seller together, do I think fulfil an useful purpose, as they must stimulate thought and be the means of developing the desire to see the industries of the country expanded and more firmly established. The result of such exhibitions might not be immediate but nonethe-less for their educative value I think Government would be justified in encouraging them.

Government patronage.

11. There is undoubtedly a tendency on the part of some Government Departments to avoid as far as possible taking the responsibility of purchasing goods made in India, and it is not altogether difficult to understand this reluctance. Usually the purchasing officer has little or no knowledge of the comparative values of articles submitted to him, and he is consequently imbued with the fear that he will be " let down " if he accepts an Indian-made article which his organs of sight tell him is not exactly the same as the Home article. Should he be a distributing officer as well as a purchasing one, and this is generally the case, he dreads the criticism of those to whom he will supply his purchases. He knows that the chances of inferior articles being accepted from contractors by his subordinates is at least not less in India than it would be at Home, and the consequence is that the India Office is used to the fullest extent possible, often probably to the complete ignoring of the rules relating to Government purchase of stores. The remedy would lie I think in the establishment of a Department in India, sufficiently in touch with the industries of the country to be able to decide whether goods required by Government could be obtained in India, and sufficiently well staffed by experts to be able to accept full responsibility for the standards to be adopted, as well as for the settlement of disputes which might arise between contractors and purchasing departments.

12. There should be little difficulty in ascertaining from manufacturers what is the best they could offer to meet specific requirements. And the tests applied should be not so much whether the article offered by the Indian manufacturer is exactly the same as that obtainable at Home but if it is really suitable for the purpose for which it is needed. Though its appearance differs will it last as well ?

Publication of lists.

13. Lists of articles imported by Government should most certainly be issued and accurate information of the total cost, delivered in India, of such articles should also be made available. A Stores Department with the powers of the India Office if established in India and judged by the results it could show of having encouraged Indian industries, without at the same time increasing the burden of expense, would no doubt soon get into touch with those capable of meeting the requirements of Government.

Land policy.

14. The land policy of the Punjab Government which in so far as it protects the agriculturist from money lenders is undoubtedly the best, for the Province has still some drawbacks from the standpoint of industrial concerns. Both the Land Alienation Act and the Pre-emption Act constitute great obstacles to the purchase of land in this Province by private firms desiring to establish or develop industries. A brief account of the difficulties encountered by my Company in acquiring land during the past few years will illustrate this. In 1910 we endeavoured to acquire a block of land in the neighbourhood for further development, and on which we could build more labourers' houses, quarters for European and Indian staff, as well as to provide recreation grounds for all the community, and to assist the various religious bodies under our control to have suitable places for their respective worship and meeting. We informed the District Officer of our intention and he promised us that when the applications for the sale of land to us were put before him by the Zemindars concerned he would certainly sanction the sales. We quickly came to terms with the owner of one of the plots in the block we wished to acquire and the application to sell the same to us was in due course put before the District Officer but was rejected on the ground that there was no need for the Zemindar to dispose of his land. On a fresh representation this order was reconsidered but it was decided that it was necessary, in order to fulfil the law and rulings on same, to give the other Zemindars in the village opportunity to buy the land if they were so disposed and that only in the event of no Zemindar being prepared to purchase the land could sale to us be sanctioned. Information was thereupon sent to the villagers of the intention of the holder to sell his land. Although our rate was 50 per cent above the price ruling at the time some Zemindars came forward and made a higher offer. We had reason to believe that this offer was not a *bond fide* one but in spite of our representation to this effect the District Officer decided to grant those

making the offer three months within which to complete purchase at their rate. At the end of this period, just as we expected, the Zemindars withdrew their offer. The owner of the land by this time had become rather disgusted and did not see the use of going backwards and forwards to the District Court. After the lapse of some further time as he really desired to sell the land at the favourable rate we offered, which would enable him to purchase equivalent land elsewhere and still have a considerable sum in hand, a fresh application was put before the District Magistrate and consent was then given to have the sale to us put through. At this stage however some of those who claimed pre-emption rights came forward and opposed the transfer. They had no apparent interest in the land, as though very distant connections of the seller it would have needed a catastrophe in the shape of the death of about a hundred people to have given them any rights of monetary value, yet we had, in conjunction with the seller, to prove to the satisfaction of the Courts—for the first decision in our favour was appealed against—that a child of the seller was actually such! And by the time the case was finally settled four years had elapsed from the date of our opening negotiations. And we have not even yet succeeded in acquiring all the land we need for the developments to which I have referred. We find that the present holders of plots are quite willing to close with us at the terms we offer, but they hesitate to do so owing to the opposition they receive from very remote relatives who threaten legal action unless they are pacified. This really means that the Pre-emption Act is in such cases used simply for purpose of black-mail. I am not prepared with any definite suggestions which would remove these checks to industrial development as I recognise that Punjabee agriculturists should be protected from the clutches of the *bania log* in so far as it is possible to obtain this result by placing restrictions upon the alienation of land. It ought however to be possible for legal luminaries to evolve some fair means of overcoming the difficulties I have mentioned while fully protecting the interests of the tillers of the soil.

15. It would, I conceive, be difficult to extend the provisions of the Land Acquisition Act so as to assist purely private concerns, which only by a stretch of imagination could be considered to be serving a public purpose, within the meaning of the Act, in their efforts to secure land, but if the element of compulsion be introduced at all it might be advisable to give the owner the option of accepting cash equal to the Government valuation of his land (*plus* the usual addition) or of granting a long lease of the land on a rental equal to say 10 per cent of the Government valuation of the land—provision being made for the period within which land so leased must be used for the purpose for which it was obtained—failing which it would revert to the original owner or his heirs.

Power from Canal Falls.

16. The backward condition of the industries of the Punjab as compared with other Provinces in India is due in part to the disadvantageous position the Province is in owing to its remoteness from the coalfields. One way in which Government could assist the development of industries in the Punjab would be by encouraging industrial concerns to utilize the large amount of water power at present going to waste throughout the Province. I refer more particularly to power which could be developed by using the falls along the Canals, though I believe more ambitious schemes are quite feasible which would, by damming up some of the rivers at selected sites, provide enough horse-power to run some hundreds of factories. There are however certain very serious drawbacks to the utilization of the Canal Falls as a means of developing power for industrial enterprises. The out-of-the-way situation of the stations where power is available, increasing as it does the difficulty of securing and retaining a regular supply of labour, the intermittence of the flow in the Canals and the necessity that therefore exists to have subsidiary sets of generators always ready—all tell against schemes for using Canal Falls. In order therefore that this source of power be utilized for the benefit of the Province it would be necessary for Government to adopt a very generous policy in connection with granting rights to use the water. It does not seem too much to expect that Government lease the water at rates which would not exceed the cost to Government of any work Government might perform in the way of erecting inlet gates, etc., provided that those who desired to acquire the water rights were prepared to spend money on their scheme and to put down within a reasonable time the necessary plant and buildings.

Training of labour and supervision.

17. It is doubtful whether the lack of primary education acts as a check on industrial development. If financially practicable a scheme of compulsory education for children under ten or twelve years of age would certainly be a step in the right direction, but from my experience I would say that the possession of all the knowledge likely to be imparted in primary schools would not materially improve the ordinary worker's attitude towards or outlook on life and it is here that the chief difficulties in the way of increasing

his efficiency and skill lie. Those with the most elementary knowledge of modern factories know that regular attendance of the employés is a primary condition necessary to complete success and smooth running, and it is in this connection that the social customs of this country act as a much greater hindrance to industrial development than does the lack of primary education, technical or otherwise. Those who profess to long for the day when their country will take its place amongst the industrial nations of the world, if they are willing to work for this end, should conduct forthwith an active crusade against the customs which encourage idleness and improvidence, such for instance as the waste of money and time on marriage ceremonies. They would no doubt meet with the clamant opposition of the *bania* class and others, but they could justly plead for the full support of Government in their crusade. Without exaggeration they could assert that until some of the glaring defects in this direction were removed there was no need for Government assistance in any other direction. They could amply prove that it was by no means unusual for an ordinary coolie earning say Rs. 12 a month to expend five to six years' earnings on a child's marriage. And that after a period lack of any ambition or desire for the improvement of their own condition was the prevailing note of the lives of the poorer classes. They could show that this lack of ambition is one of the main reasons why inducements in the way of increased pay for good and regular work held out by employers were availed of — when at all—in order that participators might have a few more days of idlenesss in the period subsequent to receipt of the increased pay.

Improvement of standard of living.

18. The average Punjabee coolie is a very intelligent man and would make an excellent Mill hand, if he could be persuaded to be regular in attendance and attentive to his work. But boys and youths who show great promise rarely advance beyond a certain limited point, owing mainly to irregularity in attendance, inattention to details and general carelessness. So far at any rate as the Punjabee is concerned I believe that the necessary intelligence and skilfulness are not wanting, and that it is due to other causes that there has been difficulty in developing the inherent ability of the worker. I am also convinced that the remedy for this inferiority is not to be found in a simple increase of pay. The employer should rather, as some have done, turn his attention to improving wherever possible the condition under which his workers live. The erection of model villages is certainly one means to this end, and anything which will increase the standard of living and comfort should be done where at all possible. But unless concurrent with employers' efforts there is an improvement in other directions, particularly where social or caste customs encourage improvidence, the Indian workman cannot rise much above his present low level. And it would be folly not to recognise this deplorable truth.

19. The monotony of factory life, even though much better paid than agricultural work, is said to be one of the chief reasons for the preference some workers have for field operations whenever these are possible, though I have frequently found that the hold Zemindars have over the lower classes and the fear the latter have of ill-treatment or of being turned out of the village is a still greater factor in reducing the attendance during harvesting periods. But whatever the cause may be the difficulty exists, and in order to aid industrial concerns to be established on modern lines Government might well consider the propriety of assisting employers to establish better housing and living conditions for their workers.

20. The conclusion I arrive at is that it is very largely outside the factory that influences must work to improve the efficiency of workers. I do not think that under present circumstances there would be anything gained by the establishment of night schools and from my own experience I know it is difficult to persuade half-time workers to attend school during any of the hours they are free. The prevailing procedure appears to be for the boys to be engaged in household duties of one kind or other or sent into the fields to tend cattle when they are not working in the Mills. Nor do I believe that the time is ripe for the general establishment of technical or industrial schools.

Study abroad.

21. I do not consider that it would be a correct use of public funds to give financial assistance to employés of private firms in order to enable them to study conditions and methods in other countries, but Government should aid such persons in getting on the track of the information sought for, by providing them with letters of introduction to British or Government of India representatives in the countries visited and by using the influence of Government as far as possible to smooth the way for their enquiry.

Imperial Board of Industries.

22. I am of opinion that it would be of advantage to have Government activities in connection with the development of the industries of the country under the control of an Imperial Department, with branches in each Province, but I can offer no suggestions as to the way in which the relations between such a Department, its Provincial officers and the Provincial Government should be adjusted. The work which has been done by

the Munitions Board should prove of great value in this connection and enable it to be affirmed authoritatively whether or not it would be practicable to form an Imperial Industries Department under a single head.

23. Briefly stated, the chief functions of an Imperial Industries Department should be to make a complete study of the industrial requirements of the country and be able through the experts it ought to have at its disposal to examine thoroughly the prospects of success of any projected enterprise for which Government advice or support had been asked. It would also initiate schemes where there seemed a prospect of commercial success which would be of utility to the country. It would control all Government expenditure on industrial work, grants for which should be made from the Imperial Exchequer. It should be sufficiently well staffed with commercial and technical experts as to enable it to undertake special or general surveys of industrial problems. Its chief officers should be recruited from the ranks of business men of proved organising ability, thus enabling it to keep fresh and abreast of up-to-date methods and ideas in the industrial world. It would through its Provincial officers be in close touch with all sides of the industrial life of the country and by comparing results of one Province with those achieved in another be able to see clearly where pitfalls lay and where it was possible to assist further in building up the industries of the country.

24. I do not think that such a Department should be permitted, certainly not at this stage, to embark on any schemes which would require the expenditure of large sums of public money, such as financial assistance to private firms, starting new businesses or the establishment of pioneer factories or the taking over of existing factories would entail. Its work should be mainly educative—and actively so. If thoroughly done the result should be a greater awakening to the possibilities which lie before the country industrially, and a clearer realization of the difficulties which exist—many of which as I have said no amount of mere Government assistance can remove. The responsibility for the successful development of a country's industries depends in the main on the people themselves and this truism needs to be strongly emphasized. All that the State can be expected to do would be to make knowledge easily available so as to help people to help themselves. In no uncertain way should the Government turn aside from the delusions of spoon-feeding businesses and from the perils of State-owned enterprises. In any country these methods would prove a snare and in India most certainly so.

25. Such a Department as I have suggested would be in a particularly strong position and one which would better enable practical views to be taken if to it were entrusted the purchase of all stores required by Government and the responsibility for economies in this connection.

Railway traffic and freights.

26. There should be a greater speeding up of goods traffic. It ought not normally to take three or four weeks for a bale of goods to reach the Punjab from Bombay or Calcutta or to arrive at stations in Bombay or Bengal Presidencies from the Punjab. Relays of bullocks travelling at the usual rate of a bullock cart could very easily deliver goods more promptly than is achieved. I am speaking not of what occurs now in War time but of what was customary in pre-war days. It has not been exceptional for a parcel to take four days to reach Lahore from Dhariwal—a distance of under 70 miles! Not infrequently the opportunity to develop business is lost owing to this cause, and in recent years my Company had to adopt a system of sending a number of bales intended for different firms in various towns in full wagon loads to Calcutta, Bombay and other centres, and through our Agents in these places distributing the bales to their respective destinations. Though freight charges increased the saving in time was very marked, even though on the return journey from the centre a bale had to travel 200 to 300 miles! It should not be impossible to arrange for better organization of traffic so as to facilitate inter-provincial exchange of produce and manufactures. And I am of opinion that this would follow the establishment of large centres to which goods would flow and from which they would emerge again in full wagon loads for their final destination. I advocate the development on a large scale of the plan we have ourselves had to adopt in order to reach our constituents with the least possible delay.

27. It is something akin to working out a Chinese puzzle to arrive at the correct freight chargeable on goods which in order to reach their destination have to travel over several lines, and though greater simplicity in this connection has been arrived at in the last few years, the way in which the classification of goods varies over different administrations still presents a great deal of intricacy which on the surface appears to be quite unnecessary and avoidable. The adoption for purpose of charging freight, of the same classification by all Railways and the establishment of an universal rate for all ordinary goods traffic, based generally on the value of the service rendered, would make I believe for an increase in traffic. And though this matter is one on which expert Railway opinion alone

would be valuable, it seems reasonable to expect that on the whole the greater simplicity would not result in any financial loss.

28. It might be remarked in passing that a staff of trained clerks whose business it is to be familiar with the vagaries to be met with and who know the salient point of the various fly-leaves and pamphlets; has to be kept by large business houses. It is the duty of the same staff to check claims for undercharges presented by the Examining Department of the Railways, but curiously enough it has never to my knowledge happened that their labours were increased by having to test the propriety of accepting refunds of freight paid in excess. It would almost appear as if the Railway staff never erred to the advantage of the Railway administration. In this as in disputes relating to loss of goods in transit the policy of the Railway Administrations is apparently: "Heads I win tails you lose."

29. The export trade of India being of such paramount importance the case for low rates of freight to the chief ports is clear, and a general view of the Goods Tariff shows that the Railway Administrations have not been wholly blind to the interests of industrial concerns. Still the special rates for traffic to ports have been more thorough and of greater assistance in developing this side of India's trade than the concessions granted on traffic to commercial centres have been in assisting industries. Cheaper rates of freight on coal, on raw materials, on imports of Mill stores, and on finished products to the chief centres of distribution are imperatively necessary.

30. In my opinion Jail industries should be confined to those which can be conducted by means of hand-machines and the introduction of power-machinery should be tabooed. I am confident that a case for the use of power-machinery on the grounds of effecting economies would not pass the scrutiny of an Auditing Board. And it would not be difficult to show that prisoners employed on power-driven machines, as ordinarily the latter would be worked in Jails, were receiving preferential treatment for which no very clear case could be made. **Jail competition.**

31. The products of Jail industries should be utilized by Government Departments, and if as I have already suggested the purchase of stores for Government Departments is taken over by an Imperial Industries Department, then the latter would be the natural agency for receiving and distributing the output from Jails.

ORAL EVIDENCE, 21ST DECEMBER 1917.

Hon'ble Sir R. N. Mookerjee.—*Q.*—In paragraph 4 you speak of Government having some form of control over the purchase of raw materials and other things. What is that control? Would you have a director or an auditor or what?—*A.*—It will be necessary probably to have both an auditor and a director.

Sir F. H. Stewart.—*Q.*—A director with ordinary powers?—*A.*—Yes, and the Government auditor could put before the Government director particulars of the way in which the business had been worked.

Hon'ble Sir R. N. Mookerjee.—*Q.*—In paragraph 11, you say that you want a department out here to buy stores. Do you want an Imperial Department abolishing the Secretary of State's man in the India Office.?—*A.*—It would be better to have an Imperial Department.

Q.—And it will have subordinates?—*A.*—Yes, in the provinces.

Q.—And anything you can't get in India you will have to refer to the Secretary of State?—*A.*—The Department would do its best to ascertain whether it could get any required article here and if it could not obtain it, it would then see whether there was any chance of developing the industry necessary in order to procure the article, and in the last stage it would obtain it from home, but it would always be on the look-out for getting supplies here.

Q.—In paragraph 14 you speak of the land acquisition policy. What is your idea? Do you want an amendment of the Act? Or do you think that the present Act permits you to buy the land that you want?—*A.*—The present Land Acquisition Act does not permit of an industrial concern acquiring land.

Q.—Don't you think it would be a little hardship on the proprietors of the land?—*A.*—That is what I say in the concluding paragraph. I am not prepared with any set-plan as to what can be done to overcome these difficulties. The difficulties exist and in order to develop industries something ought to be possible to remove them.

Q.—In paragraph 18 you speak of the low standard of living and in paragraph 19 you say that Government should help the employers in establishing better housing and living conditions for their workers. Do you mean help in building these model dwelling houses?—*A.*—Government should be satisfied that the particular concern was of benefit to the community at large and then they might very well aid either by bearing a portion of the cost

of erection of such houses or by acquiring land for such houses, always presuming that the scheme put before them was really for the good of the community as a whole and not simply for the benefit of a particular company.

Q.—But reading your written evidence in the first two or three pages I gathered that you were generally opposed to any Government assistance to foster industry ?—*A.*—The houses would be there and the terms ought to be settled for renting these houses to workers primarily. From the evidence you will find that I am not opposed to Government support of industries provided it is clear that it is in the interests of the community as a whole to grant the support.

Q.—Take for instance your mill here. Supposing Government asks that you should properly house all your workmen, can you say that it is for the benefit of the country or for the benefit of the nation ?—*A.*—I can say that it is for the benefit of the community here.

Q.—Is it not principally for your benefit as you will get better labour and will get better work done by your workmen ?—*A.*—It would at the same time be improving the conditions of housing and the conditions of living and the standard of life of the people.

Q.—Suppose Government help is wanted for a paper mill and it is for the benefit of the province, how can you oppose Government help to that proposal ?—*A.*—I don't quite see that the two things are alike.

Q.—In paragraph 23 you say that the Director should be taken from the ranks of businessmen. Do you think that good businessmen will come out and take such a job ?—*A.*—It ought to be possible, if you give terms attractive enough.

Q.—What pay would you recommend for getting a good businessman to take up that job ?—*A.*—Rs. 2,000 a month.

Q.—Do you think that you will get a good businessman to accept Rs. 2,000 ? I am speaking of the provincial man ?—*A.*—I think it ought to be possible to obtain a good businessman on that pay to be a provincial assistant to the Imperial Department.

Q.—I come to paragraph 30. You are opposed to using steam for all jail industries ?—*A.*—I am not in favour of steam-power being introduced in jails.

Q.—You say you have no objection if they confine the supply of these things only to Government departments ?—*A.*—No objection.

Q.—Do you not know that steam-power is used for printing work in Lahore Jail ? They are printing all these for only Government, and for printing Government forms, etc.?—*A.*—I didn't have printing work in my mind, but I would still allow my remarks to stand. I don't know sufficient about printing to know exactly what the work is.

Q.—Supposing they have a blanket factory which is to make blankets for all the jail people do you object to that ? They don't sell to outsiders, but manufacture for their own requirements ?—*A.*—The objection would certainly be less but still at the same time I am of opinion that the introduction of power in jails would not be altogether justifiable, and I do not think that it would be economical from the point of view of the State.

Q.—It would enable prisoners to be good artizans and skilled workmen and afterwards they (the prisoners) would probably live a good life instead of going back to dacoity or such criminal professions ?—*A.*—If all that was attained it would be of advantage. But I doubt very much whether that would be attained or whether there would be any advantage either to the prisoners or to the State if there was an introduction of power-driven machines in jails.

Sir F. H. Stewart.—*Q.*—How long have you been in the country ?—*A.*—Thirteen years.

Q.—In the Woollen Mills the whole time ?—*A.*—Yes.

Q.—You were in Cawnpore ?—*A.*—Yes for a short time.

Q.—When did you come here ?—*A.*—In 1905.

Q.—You have trouble in getting labour ?—*A.*—Yes. We have intermittent trouble.

Q.—Do you house your labour yourself ?—*A.*—Not all. We are gradually building houses with a view to housing a majority of them.

Q.—What proportion of the labour do you house now ?—*A.*—About 35 or 40 per cent.

Q.—Is that free or do you charge any rent ?—*A.*—If they put in a full month's attendance no rent is charged. But we charge 8 annas a month per house if they do not. There is only one charge for each quarter.

Q.—Do you provide a bazaar for your labour ?—*A.*—No. We have bazaars that are rented by outside shopkeepers and in addition to that we have a co-operative society

run by mill employees of which I am the President and that acts as a check on the prices of the bazaar men.

Q.—The shops are under your control ?—*A.*—In the sense that we are the landlord of the house that they occupy, otherwise we have no control over them.

Q.—Do you also have a school ?—*A.*—Yes. There is a school. It is an Anglo-Vernacular Middle School run by one of the local mission bodies. The company bears one half of the expenses and the mission the other half.

Q.—Is that a day school ?—*A.*—Yes.

Q.—Is there a night school ?—*A.*—No.

Q.—In your experience would night classes be a success ?—*A.*—I doubt, whether it would be a success here in the present stage. We have over and over gone into the question and tried to arrange a night school but we have never been able to get students.

Q.—In your written statement you think that Government financial aid would rather tend to retard the spirit of self-reliance than help to develop it ?—*A.*—Yes.

Q.—As against that is it not argued that India being still undeveloped from a business point of view the people expect a lead from the Government and if Government come out and help in the first instance that will encourage people gradually to come out of their own account ?—*A.* I think sufficient has been done already in this country in various ways to justify my view that there is no real necessity for that, *i.e.*, financial aid. I doubt very much whether any lead that the Government could give financially would be a factor in developing industry in this country. The tendency then would be the reverse for if you have given a couple of lakhs in a certain district to establish a certain industry and you make it a success, I doubt very much whether somebody else in another district would start a similar industry entirely on his own account because he would say : " Give me also a couple of lakhs for starting this industry," and thus the demands would increase and progress would be just as distant as ever.

Q.—Would you go so far as to say that if Government did do this, the intending Indian investors might possibly say: " We won't put money in private enterprises but we would confine ourselves to one started by Government or initiated by Government ? "—*A.*—There would still be a large number of people who would be willing to place their money in companies established by sound people. I don't think that Government aid to other concerns would prevent them from investing in concerns that they considered good.

Q.—With regard to new enterprises which are going to be started by Government or helped by it you are very keen that all the facts connected with the enterprise should be published in advance. Don't you think it might have the unfortunate effect of discouraging certain people ?—*A.*—Yes, that will have to be guarded against.

Q.—With regard to marketing products you are in favour of industrial exhibitions and travelling exhibitions ?—*A.*—Yes.

Q.—Would you also be in favour of small standing emporia like the one at Cawnpore which you have no doubt seen for the sale of local village products ?—*A.*—I have seen it once or twice. I think an exhibition is likely to create more interest if it is in such places as Delhi, Allahabad or Cawnpore as it would have a more lasting interest if it be at a big place where people might come and see it.

Q.—About your Central Stores Department, do you think that that could be adequately managed and supervised by the Department of Industry which you contemplate ? Would they be the right people ?—*A.*—I think it ought to be possible. If the India Stores Department at home are able to obtain the various supplies that are needed here, I think it ought to be possible for a similar department to do it in this country.

Q.—What would that department be ? Do you want it to have a separate organisation of its own or do you think that it should be a part of the Department of Industry ? —*A.*—A part of the Department of Industry under their control.

Q.—On the question of land acquisition I am not sure whether your grievances are against the law or against the Government ?—*A.*—I believe that the law, as it stands, is of distinct advantage to the Punjab agriculturists and I don't quite see how the difficulties that I have had during the past few years in acquiring land can be overcome, and at the same time how the interests of the zamindars can be fully protected. The trouble with the law is that the relatives and very distant connections can step in and prevent a sale being put through. You have first of all to get the permission of the local authorities to the sale and having done that, you are worried by the pre-emptors.

Q.—There are clauses by which Government may give exemption from the provision of the Act ?—*A.*—Yes : but there is difficulty in their operation.

Q.—They are not sufficient for your purpose ?—*A.*—No.

Q.—You want further amendments to the Act ?—*A.*—If the present owner of the land was willing to part with the land and the Government was satisfied that the industry would be established and that the land would be used for that industry then there should be no further bar, nobody else should have anything to do with the sale.

Q.—Would you like to put it in this way, that if the Government is satisfied that it is for the public good that this land should be acquired and to that it cannot be acquired without its intervention then Government should intervene and that should give a clear title ?—*A.*—Yes.

Q.—And at present you say Government feel themselves not able to do that under the existing Act ?—*A.*—Yes. Each case is dealt with separately and protracted negotiations have to be carried on. The impression that is created among the pre-emptors is that it is difficult to get the sale put through.

Q.—You say about railway freights and traffic, " It has not been exceptional for a parcel to take four days to reach Lahore from Dhariwal, a distance of under 70 miles." What do you mean by parcel ?—*A.*—Railway parcel.

Q.—You speak of sending your goods down to Calcutta and Bombay ?—*A.*—That is what we had to do in pre-war days very frequently. We have only a seasonal trade for a few months in the year and very frequently we have had bales sent back to us in the early part of the year owing to their not having arrived in proper time to be sold in the winter.

Q.—To what do you attribute that ?—*A.*—To frequent changes at the junctions partly.

Q.—What led you to start this factory here ?—*A.*—I have been told that it was due to the belief that water power would be an asset and that there was easily available a number of weavers and that for these two reasons it would be a suitable place.

Sir R. N. Mookerjee.—*Q.*—You get water power ?—*A.*—Very intermittent. During a couple of months in the year we have no water power. We also have steam plants and gas plants.

Q.—What notice do you get of the stoppage of water ?—*A.*—That all depends upon what the Irrigation Department are able to give us. They do their best to give us prompt notice. For long closure for annual repair they give us three or four days' notice, but for sudden closures in the middle of the year they have to be guided by the position of the river when in flood.

Q.—Is the steam power sufficient to enable you to manage your mill without electric power ?—*A.*—It is not quite sufficient at the present time.

Q.—You cannot work the whole of your mill without electric power ?—*A.*—No.

Q.—If you had no stoppages you would not require any steam plant or any stand-by plant ? What is the additional cost of having a steam plant ?—*A.*—We have to pay Government for water and we have to keep two sets of prime-movers, and our cost per horse power compares unfavourably with the cost per horse-power in the factories at Cawnpore.

Q.—The water by which you generate electricity goes back into the canal ?—*A.*—We are not allowed to take one drop for any purpose.

Q.—Still the Government charges a high rate for the water ?—*A.*—Yes. They charge Rs. 10,000 per annum for the water we use and they are trying to get a little more for renewal.

Q.—They get full use of the water ?—*A.*—Yes.

Sir F. H. Stewart.—*Q.*—When was the mill established here ?—*A.*—Twenty-five years ago.

Q.—Before the present company ?—*A.*—Yes.

Q.—Did they have water power ?—*A.*—Yes : free water power. At the time they failed the lease for free water had not expired.

Sir R. N. Mookerjee.—*Q.*—What is the total cost of the inlet gates that the Government had to put up ?—*A.*—Six months' rent would pay for everything that Government has done. We pay Rs. 10,000 a year and our new lease will be Rs. 2,000 a month.

Sir F. H. Stewart.—*Q.*—What about labour ?—You have criminal tribes ?—*A.*—We have had for some months criminal tribes.

Q.—Do you think that they will eventually be useful to you ?—*A.*—At present the labour is inefficient, but there are amongst the workers some very promising fellows. We always suffer here from the fact that we are in the middle of an agricultural district and we have to fall back upon the villagers and whenever there is ploughing o

some other agricultural work to be done they generally go away, at least some of them, and this means that during that period we have a short supply of labour.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Was the mill started here on account of water power only or wool, or on account of the raw product being near or what ?—*A.*—What I have always understood was that the two main factors with the original projectors were the water power that was available and the labour supply that was available. They also must have known that they were in the middle of a wool district. That would have been another factor.

Sir F. H. Stewart.—*Q.*—What about the climate here ?—Is that suitable for weaving ?—*A.*—It is more favourable than otherwise.

Q.—About the railway rates, the goods classification committee meets every year ?—*A.*—Yes.

Q.—Are you consulted as to what matters should be brought before them ?—*A.*—Yes. We receive intimation through the Upper Indian Chamber and the Punjab Chamber of Commerce.

Q.—Do you find that your representations meet with their attention ?—*A.*—Sometimes.

Q.—The suggestion that has been made to us is that there should be a board which might meet annually or twice a year to go into this question of rates and try to keep them as uniform and equitable as possible, and that it might have commercial men on it. Do you think that would work ?—*A.*—I think it might be tried.

Q.—Do you think that commercial men could be useful on a board dealing with such complicated questions ?—*A.*—I do not think they can make it much more difficult than it is at present. They ought to make it easier.

Q.—This complaint about railway rates is a very general one but it is not usually a very specific one. Can you think of any suggestion you can make which would help us ?—*A.*—I am not sufficiently in touch with the railways, and I would be speaking entirely from my own point of view.

Mr. C. E. Low.—*Q.*—Referring to railway rates, do you think it is possible to secure uniformity when you have zealous district traffic superintendents all over India proposing all sorts of special rates to increase the traffic on their length ?—*A.*—The difficulty ought to be overcome. We only come in touch with one railway and if we were in a centre like Cawnpore we would have more experience. I have not had experience of anything of that type.

Q.—On the question of power, how often do these closures occur?—*A.*—It depends entirely upon the water in the river. Last year, for instance, we had them from about the middle of October until about the middle of March, or we had short supplies in the canal. Last year was an exceptional year, and this year we have had about six weeks' closure so far.

Q.—If you could take a fairly typical year and let us have the number of closures it would be of assistance, do you know whether these closures were for distribution of water because some areas were dry or because of repairs ?—*A.*—Both.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Do they take less money, in that case, than Rs. 10,000 ?—*A.*—No.

Mr. C. E. Low.—*Q.*—What hours does your labour work ?—*A.*—During the pre-war period we worked in winter from 7 A.M. to 5 P.M. with an interval of an hour, and in the summer till 6-30 P. M. The maximum is 11 hours and the minimum 9½ hours with an interval of two hours in the summer and one hour in the winter.

Q.—Do you think that if you increase the hours of labour you will get more output ?—*A.*—No. I am strongly in favour of as far as possible limiting the number of hours.

Q.—Is the man more constant at his work during shorter hours ?—*A.*—It is difficult to say. The inherent laziness is there, and it is difficult to overcome it.

Q.—With reference to your opposition to Government financial aid to industries, does that apply also to " national safety " industries ?—*A.*—No.

Q.—This country is not self-supporting in a large number of requisites such as explosives—and a number of the complicated industries that lead up to them—internal combustion engines and a number of other things which cannot be taken up solely as military propositions. Do you think that Government will be justified in giving grants-in-aid or something of that sort to get these industries started ?—*A.*—Government will be justified in endeavouring to organise them and when necessary Government should have the complete monopoly of the products.

Q.—And be able to switch them on to pure war work ?—*A.*—Yes.

Q.—As regards land acquisition and pre-emption rights, is not the object of the Pre-emption Act, the Land Alienation Act and so on to prevent undesirable people getting hold of agricultural land ?—*A.*—That is the object.

Q.—When this land is to be industrially used that will be no longer agricultural ?—*A.*—No.

Q.—Do you think that for an industry which is *bonâ fide* it should be possible, apart from whether it is in the public interests or not, to obtain a clear title from a willing seller ?—*A.*—Yes.

Q.—Are the people here anxious to earn more money, or are they anxious to earn only a certain amount of money which suffices for their needs ?—*A.*—The tendency is to work hard for a limited period in order to get a good sum and then to have a few days idleness.

Q.—A man has a figure in his mind that he wants to earn a month and as soon as that figure is reached his desire to earn money is enormously decreased ?—*A.*—Yes.

Q.—Do you attribute that to the low standard of comfort ?—*A.*—I attribute that to the fact that he has a low standard and he does not want any more than a certain amount of money for his needs. His needs are small and when they are satisfied he does not want to earn more.

Q.—Do you consider that education is one of the remedies for that ?—*A.*—It all depends on what education you give.

Q.—In this co-operative society do you take any deposits from them ?—*A.*—We find it is difficult. We have very few who can deposit and they use it more with a view to borrowing than saving.

Q.—On the question of education do any of your half timers go to school ?—*A.*—No. Our factory endeavoured to make them to go to school but were unsuccessful.

Q.—The parents do not allow them to go ?—*A.*—No.

Witness.—In order to encourage our own workers to save we have a bonus scheme for regular workers. We give them two months' pay or six weeks' pay or a month's pay according to their qualifications if they have not been absent for more than the number of days prescribed. We used to pay them in cash, but we found that it encouraged them to stay back and what we have been doing now is that we pay them some amount instead of giving all the cash, and keep the balance in the superannuation fund.

Sir F. H. Stewart.—*Q.*—Do they approve of that ?—*A.*—No.

Q.—Are they getting superannuation grants ?—*A.*—In some cases we have given a pension to the widow or children of the workers. In the case of a jamadar or cooly working for a number of years we endeavour to help his relatives. We have made monthly recurring grants, instead of giving all the amount straightaway, for a number of years.

Q.—They expect you to provide for your servants ?—*A.*—Yes. Intermittent labour does not always do that.

Mr. C. E. Low.—*Q.*—Along what lines do you think the problem could be tackled of increasing their desire of earning more money ?—*A.*—I would give them much better housing conditions, better surroundings and shorter working days. I would be in favour of employers assisting their workers to get all the necessaries of life at reasonable rates so that the amount of money that the man earns is enough to keep him and his family.

Q.—Do you think that anything in the way of amusements or anything of that sort would help ?—*A.*—Their amusements are very primitive. What we hope to do when we acquire all this land is to have a park for them and an institute for the better educated, and on their rest days or holidays to enable them to have places where they can go and enjoy themselves and all that would tend to make them more settled and desirous of working in the factory.

Q.—Do you think it would be desirable or justifiable for the Government to compel employers to house their labour ?—*A.*—Under the present conditions I do not see how the Government can compel them.

Q.—Is it done in any other country so far as you know ?—*A.*—No. It has not been done anywhere so far as I know.

Hon'ble Sir R. N. Mookerjee.—*Q.*—You said that Government ought to help in housing the labour. It will be difficult to discriminate between what help should be given to one factory and what help should be given to another factory. Do you think that it would be better if Government made a general rule, and for any factory which wants land, the Government would be prepared to acquire it either at their own cost, or acquire it and lease it or acquire it and recover the purchase money on easy payments in a number of years, and the remaining portion of the work would be done by the proprietors of the

mills ?—*A.*—I would be more in favour of Government granting a lease than giving land outright, so that Government may have the right to step in and take it away.

Q.—A general rule like that would help ?—*A.*—Yes.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Supposing Government acquires land and builds chawls and charges you the rent, it will be a better step ?—*A.*—It will be better from the standpoint of the millowner, but whether it would be to the interests of Government to spend so much money on houses would be another question for if the industry is mismanaged and it fails the houses will fetch nothing. Government should assist the employers who are doing their duty by their workmen to the fullest extent while at the same time protecting the interests of Government.

Hon'ble Sir R. N. Mookerjee.—*Q.*—Under my scheme the Government will be quite safe. Government acquire the land and give the land and if the industry fails they revoke the lease ?—*A.*—Yes.

Mr. C. E. Low.—*Q.*—Arising out of Sir R. N. Mookerjee's question, would you make it universally applicable or would you confine it in the first instance to specially difficult areas so as to begin in the worst places ?—*A.*—I think it would be better to have a general rule.

Q.—Don't you think that there would be so much of a rush that it would impose an indefinite budget liability on Government ?—*A.*—Government would be receiving interest on their outlay. It will be a question of ways and means of finding money and I do not think it will be beyond the powers of the Government.

Q.—About the railway rates, do they charge more favourable rates for taking wool to Karachi or Bombay than they do for bringing it to your mill ?—*A.*—They have special rates to Karachi and Dhariwal and favourable rates to Karachi, but there are number of stations from which wool can be sent at more favourable rates to Karachi than to Dhariwal.

Q.—More favourable rates are given to exporters ?—*A.*—I have worked out the rates just along the lines of your question, and I find that the rates we pay are frequently more than the rates that are paid by the people at Cawnpore or by the exporters on similar traffic.

Q.—Take the converse case. Can an importer of woollen goods from abroad obtain more favourable rates from the port than you can to any port or any corresponding distance ?—*A.*—I cannot say.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.*—Have you got special rates for the Dhariwal mill from the Railway Company ?—*A.*—Special rates for some classes of goods from certain markets to Dhariwal.

Q.—You get wool from Fazilka in good quantities and you are given concessions ?—*A.*—Yes.

Q.—Supposing you send your woollen goods from here to Cawnpore do you have any special rates ?—*A.*—No.

Q.—About financial aid by Government do you know what the Governments of Japan and Germany have done to foster industry ?—*A.*—I have heard that they have done lot.

Q.—Financially they have helped a lot ?—*A.*—I am not acquainted with details of the help.

Q.—As regards land acquisition, supposing the land belongs to a Mussalman and he has given it as *wakf*, under the law how are you going to acquire that land ?—*A.*—I have not come in contact with a case of that kind.

Q.—Supposing the Government is not able to acquire such land surely the Hindus will object to their land being acquired ? If the land is held by a Mussalman under *wakf* law it could not be acquired ?—*A.*—I would not be so foolish as to want it to be acquired for me : even if I got it from Government there would be a lot of trouble from the Mussalmans.

Q.—The Mussalmans know that you cannot take it. But supposing you acquire he land of a Hindu it is just the same, if it is governed by the Hindu joint family law ?—.—I am talking about a willing seller.

Q.—You say : " The average Punjabee cooly is a very intelligent man and would make an excellent mill hand." Could he not be a manager if he has good facilities and if he is educated well enough ?—*A.*—Some of them would be. They would make excellent managers.

Q.—Are you employing educated Indians in your factory ?—*A.*—Several.

Q.—As assistants to managers ?—*A.*—As assistants in some departments, and we have some as agents in some districts.

Q.—Have you got any school for your half-timers ?—*A.*—There is a school.

Q.—Is it a municipal school ?—*A.*—The school is run by one of the local missionary bodies and the company built the building for the school and provide half the expenses of running the school. We have endeavoured from time to time to induce our half-timers to attend the school but we have not succeeded.

Q.—Is any industrial class attached to that ?—*A.*—No.

Q.—Don't you think it is essential to make your workmen more efficient ?—*A.*—I do not think that if you had industrial classes it would be possible to get any man to attend them.

Q.—But they have been doing it in the Madras city ?—*A.*—I do not think that they will do much in the Punjab side at any rate in this district.

Q.—Do you think that Government should have industrial schools in big cities ?—*A.*—If any people show that they want to acquire any knowledge at all in order to improve themselves I would certainly give them a chance to improve themselves.

Q.—You say : " Nor do I believe that the time is ripe for the general establishment of technical or industrial school."—*A.*—For general establishment throughout the country.

Q.—The time is not come ?—*A.*—I do not think the time is ripe for it.

Q.—Do you know anything about the Technical Institute in Bombay, how many students go there and pass through it and go all over the country on higher wages ?—*A.*—I have heard something.

Q.—Still you think that the time has not come ?—*A.*—For the general establishment. But for their establishment at particular places where there are people who will immediately avail themselves of these facilities I would establish them. But I was speaking of general establishment of technical schools all over the country, in every centre in the country. I would say that if there are a number of people at any place, like Bombay, Madras, Calcutta or Cawnpore who are willing to avail themselves of technical or industrial knowledge, that knowledge ought to be placed at their disposal.

Q.—For village industries you do not want village industrial schools for the people ?—*A.*—I do not think they will do anything to advance the interests of the country, but I am speaking with no very intimate knowledge of the cottage industries.

Q.—In paragraph 24 you say : " All that the State can be expected to do would be to make knowledge easily available so as to help people to help themselves. In no uncertain way should the Government turn aside from the delusions of spoon-feeding businesses or from the peril of State-owned enterprises. In any country these methods would prove a snare and in India most certainly so." It has not proved a snare in Japan or Germany ?—*A.*—I do not know, I am not quite sure.

Q.—As regards factory hours, if you fix them at ten hours a day do you think that in the hot weather the workman can work five hours at a stretch without rest ?—*A.* Yes. I think so if he starts early enough, if he starts at 9 A.M. in the morning no, but at sunrise he could.

Q.—Does he not loiter about in the compound ?—*A.*—Yes.—Even if the mill works for two or three hours only you would not get the whole lot of them to work steadily.

Hon'ble Sir R. N. Mookerjee.—*Q.*—At what time do you begin your work ?—*A.*—Just at present we are working long hours. In the pre-war period in the winter we opened a little after sunrise and closed at sunset, and it would average between 9½ hours in the winter and 11 hours in the summer.

Q.—You are working with an oil engine when you do not get water power ?—*A.*—With gas engine and steam engine and we have an oil engine for electric light.

Q.—You get coal from Bengal ?—*A.*—Yes.

Sir F. H. Stewart.—*Q.*—It has been put to us that if Government granted certificates of quality it might help some of these weavers, of pashmina cloth for instance. Do you think it is a practical solution ?—*A.*—I do not think so.

Q.—It is said that they used to suffer greatly in pre-war days from cheap shoddy German goods, and that this might help them to keep the trade they have secured ?—*A.*—The difficulty would be to ensure that each article which is put on the market with a certificate of quality attached has been examined and found correct by the authority signing the certificate. There would be opportunities for fraud. I do not think that I would be attracted by a certificate. I do not think that if you go into the market and show the certificate of quality it will be of great benefit.

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CALCUTTA.

WITNESS No. 389.

MR. F. J. EDE, A.M.I.C.E., M.I.M.E., *Civil Engineer, Silchar, Cachar, nominated by the Cachar Branch of the Indian Tea Association.*

WRITTEN EVIDENCE.

Financial aid to industrial enterprises.

Q. 1. Have had no great difficulty in financing the various businesses with which I have been connected—tea estates, saw mills, workshops, etc. *Capital.*

I don't think there are any difficulties to remove, where the concerns are sound.

Q. 2. Industrial enterprises are usually started by one or more capitalists, either as a private Co-operative, or a limited liability Co. when more capital is required. Debentures or Preference shares are issued, or more shareholders are admitted, and in large concerns the financial arrangements are handed over to some expert firm of Financial Agents, either in England or in India, there are many firms who specialize in this.

Q. 5. I am not a believer in Government aid in these districts except in what might be called their own department, *i.e.*, railways, agriculture, forestry, and all works connected with the country, and its improvements generally. Government assistance.

Q. 5. (1) I don't approve of this except in very special cases. I do not consider it fair to tax a prosperous industry in order to bolster up a bad one, let the lame ducks go.

There may be special cases due to floods, storms, or famine, when this might be sound, it is not to be encouraged.

(2) Same as above.

(3) This is alright for work developing communications, or the good of the public, generally as against in individual help.

(4) Not advisable.

(5) Sound enough in exceptional cases of new industries, but very risky.

(6) No.

(7) If for the public benefit, yes.

Q. 6. In all.

Control by experts of all cash expenditure, and general management, as is done on Tea Gardens by expert Visiting Agents, and Accountants.

Q. 7. This class of work should be left severely alone by Government, except in very spcial cases connected with improving Agriculture, etc. Pioneer factories.

Q. 8. As far as practicable on the Co-operative principle Government supplying machinery, etc.; those helped must either share in loss or their village Panchayats must guarantee Government against loss; the business should be handed over, as soon as those who are taking over can reimburse Government original capital *plus* interest. Pioneer factories should be closed as soon as the experts are satisfied that they are not sound.

You can only run successful industries with experts, otherwise you lay yourself open to severe criticism.

Successful pioneering experiments should only be made into permanent Government enterprises when there is no means of getting other shareholders to carry on.

Q. 9. I don't know any *sound* concerns that are hampered by the conditions under which they are financed. Financing agencies

Q. 10. No occasion for more assistance.

Q. 11. I have known many private concerns developed by the co-operation of three or four individuals, frequently eventually turned into a company. Co-operative Societies should be worked by a head, controlled by a committee, for the benefit of those who are co-operating. Co-operation.

Q. 12. Co-operative Societies should be encouraged for the industries which develop the natural resources of the country, and which without Government aid would not be developed at all. Such industries, as the irrigation of the land in the cold weather, all along the banks of the bigger streams, and rivers, by means of pumps and small oil engines by which better or more crops could be grown, and very luxurious grass could be produced, and very much better cattle developed; a very great desideratum for this part of the world.

Q. 13. This depends on your experts and many different local conditions. Government should never compete with private enterprise, unless it is for public good. Limits of Government assistance.

Q. 14. Government should not run, or aid a new enterprise which is likely to interfere with the expensively imported and trained labour of an existing enterprise.

Technical aid to Industries.

Q. 15. I have met many scientific officers, who were paid entirely, or partially, by funds supplied by Government. The officers of the Indian Museum, the Agricultural, and Forest Technical aid in general.

officers, Public Works officers, and the officers of the Tea Association, also the Geological Department.

Q. 16. Improvement on tea estates in the way of manuring, removing pests, etc., blights, and many other ways, *vide* Dr. Watt, Dr. Mann, Dr. Wood Mason, and others. Private firms and companies besides availing themselves of the officers of the Indian Tea Association to whose salaries they contribute, frequently call in consulting private experts, some companies employ their wholetime experts, and at times avail themselves of Government experts.

Q. 17. They should always contribute a fixed fee, on business lines except in very special cases. In no case should Government paid experts be allowed to compete freely with private experts ; this is sometimes done, advice being given without any charge being made, except for out-of-pocket expenses.

Q. 18. No business allows its private affairs to be published. If the results are to be published, it must be with the sanction in writing of the parties concerned. No private expert would ever get employment, if it was found that he divulged the secrets of his employers' business.

Q. 19. No.

Q. 20. No.

Research abroad.

Q. 21. I used to be one of the original subscribers. I stopped subscribing, as I had no use for this Institution, and neither the time nor inclination to wade through its publications.

Research.

Q. 22. All research should " as far as climate, etc., permit " be carried out in India, and as near the spot as possible.

Researches to be conducted in England : this is for each special expert in his own department to decide.

It is impossible to say definitely until the question arises.

It would be useless to experiment on the manufacture of tea in England, when it had to be produced in India.

Q. 23. *Cannot* do it without great Indian experience, except on the question of what and how the market requires the finished product : this is generally done to sample.

Q. 24. The Scientific Department and existing Government officers have frequently been very useful.

Surveys for industrial purposes.

Q. 25. Very much so.

Q. 26. On business lines by business men who are dependent on results for their livelihood.

The development for the benefit of the people of the materials and resources of nature.

Q. 27. By publication in pamphlet form with good illustrations.

Assistance in marketing products.

Commercial Museums.

Q. 28. Interesting ; I *don't think any* business man would look for what he wanted in the Museum.

Q. 29. They should be central in big towns, and each department run by a practical business man, who has been earning his living by that particular trade or Industry.

Sales Agencies.

Q. 30. I have no experience of sales agencies.

Industrial Exhibitions.

Q. 31. Industrial exhibitions are of very little practical value, unless on a large and comprehensive scale, with working demonstration exhibits.

Q. 32. Government should hold them occasionally, but they must have a business man to run them ; it is of no use letting a Municipal Commissioner, who has been trained as a lawyer, or doctor, run an industrial exhibition ; run it with experts, advertise it with an expert, make it widely known, at least two years beforehand, and run each special department by its own specialists and give special prizes for good exihibits, not for freaks.

Q. 33. Exhibitions should be instructive, and useful to the particular part of the world in which they are held, if they are so, the buyers and sellers will both turn up freely. They should not be run as dime or freak shows.

Trade representatives.

Q. 34. People in trade prefer as a rule to have their own representatives and most of them do. I don't think Government should interfere in these matters, trades associations, and Chambers of Commerce usually fulfil these functions.

Government patronage.

Q. 37. Only 5 per cent. of the imports are by Government, they should call for tenders in the press at intervals, and deal with reliable, and reputed firms.

Banking facilities.

Q. 39. Marketing indigenous products is done by Agents or middle men. The present system works quite well.

Other forms of Government aid to Industries.

Land policy.

Q. 41. The bulk of Cachar is in forest reserve, and is not given out to cultivators.

There are half a million acres of reserve in this District, among this land there are many thousand acres of Bhils, which will never grow good timber; these should be thrown open to cultivation.

Q. 42. Any new industry should have special concessions.

Training of labour and supervision.

Q. 44. During the thirty-six years that I have been in India I have professionally visited many hundreds of the tea factories, fibre factories, oil mills, saw mills, etc. General.

I think more has been done in the tea industry than in any other that I am acquainted with.

I look upon every factory which is properly run as the best type of technical school which you could possibly have.

They have been an enormous advantage to the province, and the men themselves.

In most well-run factories there are one or two Europe-trained and fully qualified engineers, who are training Indians, to be expert mechanics, carpenters, blacksmiths, tinsmiths, etc. I have myself and with the aid of my staff assisted to train many hundreds of Indian artizans. In many factories you will find men who came to tea as ordinary coolies, five or six years before, now in charge of machinery worth over half a lac of rupees, all the training having been received on the garden; many of these men learn how to read and write, and work to plan and scale.

Not only is the factory a technical school, but the life, routine, and work on the garden is an education in itself, both for the Indian and the young European fresh from home.

They learn what cultivation and tilth mean, the reasons for, and the best way to carry out various systems of manuring, draining, etc.

Many of them learn how to grow European vegetables and fruit trees.

These men when time expired, take up land in the villages, and the more intelligent of them become very rich, and prosperous farmers. The value of cattle owned by time expired coolies runs into crores of rupees, the sugar cane mills owned by time expired coolies in the Surma Valley alone, are worth over four lacs of rupees.

When I came to India there were practically no iron sugarcane mills in the District, many estates had no machinery at all, there were no oil engines or electric light, plant, or water power plants, no oil mills, etc.

In all the industries I have been connected with, in Assam, Bengal, the Dooars, Chittagong, and Cachar, all the Europeans are constantly training thousands of Indians, and a very good training it is too. This is all being done without costing Government a single penny. I know of cases of ignorant Indian boys starting on four or five rupees a month twenty years ago, now drawing up to fifty rupees a month, as a Cha Mistri Sirdar. I am positive that many people do not know what European Capital and the Tea Industry have done for the Indian, the Tea Industry is now the most prosperous in India, and it only wants to be left alone internally. Externally it wants a great deal.

Q. 45. I think this is in very good hands and should not be interfered with.

Q. 46. Thirty-six years in India and ten years at home. The firm I manage train all their own workpeople, in their own way, and have trained hundreds, many of whom are now earning very good wages.

You cannot beat the apprenticeship system, but help the smarter lads to get as much *technical*, or as it would be better to call it, scientific, training as possible. When you have to earn your living, by what you make in competition with others in the open market, you realise the advantage of practical manual training. I would make every boy go through some course of manual training before he takes his scientific course, it will harden him up, and make a man of him; we put our apprentices to start with at the smithy. I was at school for some years in England, then went to Germany, and took the first portion of my scientific manual training there, and then continued in shops, and technical or scientific colleges, and night schools in England. An Engineer's education is never finished, and the more he learns the more ignorant he finds he is. Apprenticeship system and industrial and other schools.

Q. 47. Men from Indian industrial schools are so far of no use to us in our business.

Q. 48. The two systems should be developed according to circumstances, and the nature of the business; we prefer to train our own local men.

Boys to join crafts should go to schools from 6 to 12 years of age, and then be apprenticed. It is a mistake to put them through the technical college first, if they are to be craftsmen.

We take on lads from 12 years old, put them on to forge and light hammer first, to harden them up, and make them physically fit; men of this class do not require higher education; it spoils them, they pick up quite a lot of useful education "not book learning" of their own, whilst learning the manual work.

Q. 49. Let the boys go wholetime to a primary school until they are twelve, and then come into the shops, when the first process is to harden them up. We give apprentices liberal wages starting at six or eight rupees a month, according to the physique, and advance their

wages by a rupee a year, to diligent youths, with free house and medicines. In my opinion the physical training with good feeding is more important than the so-called technical training. In a business where there is much competition, only fit and able men can be employed.

Q. 50. We are of opinion that all firms should run their own industrial school, entirely under their own control. Ten years in a general repair shop, part of the time being spent on erection work, is a first class training to willing and healthy lads.

aining of pervisors. Q. 51. Skilled managers are brought out from home by various industries and they train the supervisors, etc. Occasionally ordinary apprentices prove themselves capable of carrying on very important work.

Q. 52. Scholarships might be offered, but I am rather inclined to leave well alone, there is no great demand at present for the higher trained Indian and when there is the man will be there. The best training is obtained on the actual work itself, not in an industrial school making models and toys.

lechanical ıginsers. Q. 55. There is no law requiring qualifications at present except for engineers on vessels, railways, etc., where there is a chance of the public losing their lives. I suggest that Government encourage all drivers in charge of factories to become efficient and obtain certificates, it must come.

General official administration and organization.

Q. 56. Should be left to the Agricultural and Forest Department, with specialists, practical commercial experts, and trained men.

Q. 57 to 62. I think these would be more in the line of a Government official than in mine.

Organization of Technical and Scientific Departments of Government.

echnical lepartment. Q. 63. With the exception of the Indian Tea Association's "assisted scientific department," and the Forest, and Agricultural Departments with a few very poor survey schools, there is none.

I think this should be left severely alone by Government except Forests and Agriculture. The Forest Department as such is hopeless. One European is in charge of half a million acres; it takes him all his time to check the collection of forest dues. There is no forestry in the Surma Valley, and very little in Assam. If the whole of the revenue for the next thirty years were devoted to forestry some good might be done. All trees of any value have been extracted, within a reasonable distance of the rivers. Why is it that we have to import timber from Burma and Australia? There must be something radically wrong.

No reasonable person would object to such a huge area being in forest reserve *provided* some practical work were done. The better trees in this district spread very slowly, and it is up to the department to take active steps to plant them. They have far too much land in Forest Reserve; if they planted out 1,000 acres a year, it would take them five hundred years to have any show at all.

The only trees which propagate freely are those whose seeds are carried by the wind, or birds, and other animals. I refer to trees such as the simul, acacias, bignonias, and the commoner figs. There are only about six different trees indigenous in this district which are worth planting.

mperial Departnents. Q. 64. I think as far as this district is concerned Government had better leave industrialism alone, except in the case of agriculture on a small scale and forestry. The Forest Department is quite capable of absorbing all the Government spare money, and attention, for the next thirty years.

Provincial Departnents. Q. 68. Communications, sanitation, forestry, agriculture. The elimination of malaria is the most important aid that can be given to industries in this province.

Q. 76. By teaching common sense.

Study of Foreign methods. Q. 77. It is useless their doing this unless, when they come out here, Government are prepared to spend money on what they advise.

Reference libraries. Q. 78. None. Have purchased my own.

Q. 79. A waste of good money, in this district; alright in big towns.

Colleges of Commerce. Q. 80. No. There are plenty of very good ones already.

Government organization for the collection and distribution of Commercial Intelligence.

Statistics. Q. 82. No, have no use for his statistics.

Industrial and Trade Journals. Q. 84. I have never seen the "Indian Trade Journal."

Q. 85. Better left alone; those interested are much better at it. There are too many already; they mostly go into the waste paper basket, or to the bazaar to wrap up sweets.

Other publications. Q. 87. Special monographs are at times useful, but from the point of view of the practical man they are too crude, and don't go far enough as regards industries, etc.

Q. 88. Successful people in trade don't want any interference in their business, but would like better, cheaper and more reliable means of communication.

Other forms of Government action and organization.

Q. 89. Certificates should be given for all comestibles such as ghee, milk, oils, meat, fish, etc., compulsory for ghee and milk. Certificates of quality.

Q. 90. The Local Board or Municipal Sanitary Department should grant such certificates.

Q. 91. Penalties should be imposed for the adulteration of tea and tea waste. Prevention of adulteration.

Q. 96. Yes. Registration of partnership.

Q. 97. At times, all communications are interrupted except by country boat. The railway to Assam has been a great loss. Timber was being imported from Assam. Roads, Waterways, and Railways all require improving. Many of the roads are below flood level, have insufficient waterways and are breached after heavy flood. The railway is closed after every bad flood causing great inconvenience. Waterways have been almost entirely neglected. Lack of transport facilities.

Q. 98. Freights on produce in bulk such as coal, timber, etc., should be reduced.

Q. 100. All our waterways require improvement.

Q. 102. I don't think anything has been done by Government; private firms have carried out minor schemes; for tea garden factories, etc., and have drawn up various projects which have not been carried out. Hydro-electric power surveys.

Q. 104. Corundum in the Kassia Hills. Essential minerals.

Q. 105. Absolutely hopeless in Cachar, a little better in parts of Assam and Dooars. Run on the wrong lines. It is simply a revenue-collecting department as it is now. Many saw mills have been closed, principally owing to the Forest Department. My firm ran a saw mill for many years, but lost a lot of money over it. We had to pay Forest dues on bark saw dust, and bad wood; this took away all profit, on the cheaper timbers for boxes, which was the bulk of our trade. Forest Department.

Q. 106. Improvement of rivers, streams, and roads.

Q. 107. This should have been undertaken years ago.

It is time the Forest Department practised forestry.

ORAL EVIDENCE, 3RD JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* For how many years have you been in Assam?—*A.* 37 years.

Q. You do not think that, in a backward province like Assam, Government should foster industries?—*A.* I would not call Assam backward.

Q. What industries have you got except tea?—*A.* Petroleum, lime, coal, oil mills, etc.

Q. These are not developed yet?—*A.* Lime is very much developed.

Q. You do not think that Government should give any assistance to foster industries?—*A.* I very much think so.

Q. But you say here in answer to question No. 5, "I am not a believer in Government aid in these districts except in what might be called their own department, *i.e.*, railways, agriculture, forestry and all works connected with the country."—*A.* That is my point. We want aid from Government in their departments. They have various departments. We do not want interference with private enterprise, but we want aid in the way of communications, sanitation, education, forestry, etc.

Q. And all the industries you have named, coal, petroleum, etc., are European concerns, chiefly of European capital?—*A.* There are some Indian oil mills and there are Indian firms as well as European firms working lime stone and I think there are some Indian firms working coal.

Q. In your note you say, "In all the industries I have been connected with in Assam, Bengal, the Dooars, Chittagong, and Cachar, all the Europeans are constantly training thousands of Indians and a very good training it is too.". What sort of training do those thousands of Indians have?—*A.* In the tea district there are many experts. Many of the larger companies have got their own experts in agriculture, engineering, electricity, and in various other subjects, the men who work under them are trained by them. They get training in agriculture, engineering, electricity and various other subjects.

Q. Do you mean labour training, or training as supervisors or foremen?—*A.* We generally take them as young as possible,

Q. What class of people?—*A.* All classes.

Q. Do you mean that you have got a technical college and you take boys who pass the matriculation or some such examination?—*A.* We give them a very practical training. When they have done ten years in such a way they earn good salaries.

Q. What is that good salary?—*A.* Rupees 50 or 60 a month, they join on as ordinary apprentices.

Q. These are of the cooly class ? You train those coolies who work there?—*A.* Not only coolies, but people from the *kumar* and *kamar* castes. I do not know what the definition of a cooly is, in India.

Q. They are the artisan class?—*A.* They commence as coolies or hammermen.

Q. You do not know what the cooly class is in India with your experience of India for more than thirty years?—*A.* I know what a cooly does, when he comes to a tea garden.

Q. You say you are doing enough for the training of these men but do you give them sufficient training to be qualified mechanical foremen or supervisors?—*A.* They very soon rise to that.

Q. Can you tell me any man who has been the foreman of a shop?—*A.* I can tell you of the men who have been foremen of saw mills, and foremen in tea factories. My experience is not connected with towns. I am only speaking now about Assam and the mofussil.

Q. What education do these boys get beside the practical training?—*A.* A great many are taken from schools, and some of them attend night schools. The apprenticed boys in our firm all get education. We teach them in English, from the beginning and we do not teach them vernacular. They can rise to the posts of draftsmen. Some of them go away, some of our men have gone to Mesopotamia, drawing Rs. 125 a month.

Q. As what?—*A.* I suppose they must have gone as part of the Public Works Department, as overseer or something like that.

Q. Have you got a regular staff of teachers, and where do the students get their practical training?—*A.* A great deal of their training is naturally personal training. We employ about 30 babus, and before the war we had anything from a couple of hundred to 500 mistries and mates working on different classes of work. We take our boys as a rule at the age of 12 and we give a good pay to start with.

Q. What good pay?—*A.* A boy at the age of 12 starts at Rs. 6 a month. He gets free house, free medicines, and he rises by one rupee a year.

Q. In answer to question No. 64 you say, "I think as far as this district is concerned Government had better leave industrialism alone." You do not want Government to do anything there?—*A.* Not as regards industries, but we want them to do a great deal in other respects.

Q. To construct roads and railways?—*A.* We want the district to be opened up. We want sanitation, and education.

Q. We are here to enquire about the development of industries and not about sanitation. It is not within our reference?—*A.* Very well.

Sir F. H. Stewart.—*Q.* What is the name of your firm?—*A.* Messrs. Ede Brothers.

Q. How long have you been in Silchar?—*A.* Since 1880.

Q. With reference to the various forms in which Government aid may be given you do not think that guaranteed dividends are feasible except in the case of works of public benefit. Would you include under those, things like lighting companies and tramways?—*A.* I do not think we are sufficiently far advanced for lighting companies and tramways.

Q. Road transport and light railways?—*A.* That is generally done by the railway companies under Government guarantee. Owing to the war that has been stopped. The Government were very keen on that.

Q. You say that the supply of machinery on hire purchase system is sound enough in exceptional cases of new industries but very risky. But would it not help the smaller people very much?—*A.* Not all industries. First of all, you must have the raw material and unless you have got it in sufficient quantity there is not much use in starting an industry not unless you develop agriculture to produce the raw material.

Q. But in the way of helping agriculture to produce the material?—*A.* I agree with you there, Sir, that they can do a lot in that direction. There is a lot of land, waste land, which only wants a little help in the way of irrigation plant.

Q. Has the Engineering department under Local Government dealt with that question?—*A.* No. I have personally made some experiments in the way myself and found it very successful. We have got a large number of big rivers and if the Government would take up the matter on a big scale it would be very advantageous.

Q. Who do you think on behalf of Government should conduct these experiments now?—*A.* The Agricultural Department.

Q. Don't you think that it is advisable to have an Industrial Department which would perhaps deal with it?—*A.* If the Government have the funds and the staff. The trouble with Assam is want of money and staff. Every department is understaffed and every department has not enough capital. What Assam wants is capital.

Q. Has the Agricultural Department got time and men to devote to purposes of this kind?—*A.* Not at present.

Q Your remedy would be to staff the Agricultural Department very much more fully?—*A.* Quite so.

Q. You do not want particularly to see a new Industrial Department?—*A.* You must have the raw material to work on. We are very poor in most of the minerals and those

that we have are being worked fairly well, and to get the animal or vegetable products we must have better developed agriculture.

Q. And you think that, that can be done by the Agricultural Department, if it is better staffed and there are more men and so on?—*A.* I think so. I think that we must begin at the beginning, that is, with the raw material. One of our more valuable products is oil seeds, the bye-product of which is used largely for manuring.

Q. With reference to pioneering factories you say, "Pioneer factories should be closed as soon as the experts are satisfied that they are not sound." But unless the experts were satisfied that they were sound surely they should not be opened?—*A.* You see we have no experts in Assam. We have Mr. McSwiney and Mr. Mackay in charge of the Agricultural Department, but in the agricultural industries there are no experts in Assam. I suppose, I am the only one who has attempted experiments with power irrigation.

Q. But supposing that these pioneer factories are sound would you hand them over to private enterprise as soon as they have proved to be sound?—*A.* I take it that it is the general policy or practice,—not to interfere with private enterprise.

Q. Are there many co-operative societies in Assam?—*A.* We are just starting. Not very many as far as I know.

Q. Those that do exist—what are they for? Agriculture?—*A.* I have really very little to do with it. There has been one started in Cachar which has not been very successful so far.

Q. Do you think that there is scope for them, or that the people of Assam are sufficiently advanced to realise what good they can get from them?—*A.* I think that a great many people in Assam are very much more advanced than the other parts of India. I think that the percentage of literate people in the older portions of Assam and the Surma Valley and the Khasia Hills is greater than in other parts of India, outside the towns.

Q. With reference to experts you think that Government paid experts should not be allowed to compete freely with private experts, and the results of their work should not be published. Would that be fair? These experts who would only be entertained by Government, if they were entertained at all, in the public interests—should not the results of their work be available for the public?—*A.* You are referring specially to the tea industry?

Q. No.—*A.* My remarks, of course, were naturally with respect to the tea industry; as I am supposed to be representing a branch of the tea industry.

Q. With reference to the tea industry you say that it is pretty well organised already?—*A.* I do not like to say that, there is no room for improvement. It is still in its infancy, and since I have been in the tea districts the outturn has gone up to 20 maunds an acre, where the gardens have been worked on scientific lines.

Q. The tea industry has its own scientific organization?—*A.* They have a scientific department which I do not altogether approve of.

Q. In what respects do you think it should be improved?—*A.* They should have a practical planter at the head of it. They have highly trained scientific men from home. They have no experience of Indian labour and Indian agricultural systems and things of that kind.

Q. But their functions are entirely advisory?—*A.* Yes. They have no executive functions.

Q. About the Imperial Institute you say that you used to be one of the original subscribers. Were you a subscriber to the publications or to the Institute?—*A.* To the publications.

Q. You gave them up because you found them no use?—*A.* I cannot say that I found them of much use.

Q. With reference to the land that you say is available for cultivation, are there any special difficulties in the way of people who wanted to take up that land?—*A.* Anything that is in the Forest Reserve is absolutely closed and there is no possibility of getting anything out of it. I was connected with a block of land. In the Hattital there was a block of 20,000 acres and it was proposed to deforest it, a portion to be given to Indians and a portion to be developed by some companies. There was quite a number of Indian and other firms interested in this, and they tried hard to get this by saying that the draining of this Bhil was not an easy matter to the Forest Department and that the people who would take it up would lay tram lines through it and the Forest Department would have the use of this tramway to get its timber out, ——.

Q. Did they have the support of the Local Government?—*A.* We had a conference and there were on it the Deputy Commissioner, Subdivisional officer, and the various other officers, and half a dozen planters, representing the various Calcutta firms—respectable people,—and the matter was taken up to the Chief Commissioner of Assam and the Forest Department were naturally against giving up any land.

Q. You do not know what the Assam Government's recommendation was in the matter to the Government of India?—*A.* No.

Q. How long ago was it?—*A.* About four years ago when Mr. Jackson was the Deputy Commissioner in Silchar.

Q. Have you any definite system of apprenticeship? Have you any articles or indentures?—*A.* No. We want no more people to come and work with us. It is a privilege for them to come. They start on Rs. 6 a month and rise by one rupee a year. If the boy is a smart boy and older than twelve we start him on Rs. 8 a month. We start them according to their ability.

Q. Where do they come from?—*A.* We have all sorts of men, Manipuris, Bengalis, etc. We are not very particular what the caste is. We keep a boy if he is suitable and if he is not we send him away. We have no agreement.

Q. I suppose that these boys when they come to you have had no education?—*A.* Some of them are educated. Some of them have got primary education. We do not worry about that. We give them a certain time every day for education, and we start with the Roman character.

Q. Do they stay with you after apprenticeship?—*A.* A great many. Some of them have been with us for thirty years. A great number of them get higher pay. Some of them drift to Government service and tea gardens, and we always lose a few every year. The men who have gone away are getting Rs. 40 or 50 a month.

Q. So far as you are concerned and your firm is concerned your system of apprenticeship works very well? *A.* Yes.

Q. You do not think that it will be advisable for Government to institute any system of articles of apprenticeship?—*A.* Not so far as we are concerned. We have had Government apprentices. They are with us for three years. They are taught drawing and they can read and write. The last man that came to us passed his examination, and on completing his examination he was entitled to Rs. 25 worth of tools to carry on his trade. He refused to take the tools and we asked him the reason. He said that he was not going to be a mistry but a draftsman. He would not take on a mistry's work, but was going to be a draftsman. As far as I know he is now a tracer in the Public Works Department.

Q. What sort of pay is he getting?—*A.* I could not tell you.

Q. With reference to your remarks about the Forest Department can you tell us what the organisation of the Forest Service in Assam is?—*A.* They have Europeans and Indians some of whom are forest rangers. In Cachar before the war we had one European and four or five rangers.

Q. Have you a Conservator or a Deputy Conservator?—*A.* Deputy Conservator. The Conservator I think lives in Shillong who is in charge of the whole province. We have one European in charge of half a million acres.

Q. Is there any provision made in the Forest Department in Assam for commercial knowledge? Is there any one there who has got commercial experience, and knowledge?—*A.* Not that I know of.

Q. Is there any engineer associated with the Forest Department?—*A.* Not in the Surma Valley. At the present time our district is in charge of an Indian—no doubt, a very competent man, but he is not a commercial man.

Q. Do you think that your criticism would be met to a large extent if commercial and engineering elements were introduced into the Forest Service?—*A.* The first thing that we want is forestry. I have been thirty-seven years up here and I have to import my timber from Europe and other places. When there was no war on we used a large quantity of timber in our contracting business, building factories, bungalows, etc.

Q. Why did you have to import it from Europe; because it was not available in Assam, or because you could not get it out from the forests here?—*A.* In Assam proper there is a certain amount of timber and also in the Lushai hills but it is very difficult to get it out and it takes time to season it.

Q. Is it that suitable timber is not found there or is it the difficulty of extraction and transport. ?—*A.* The difficulty in Cachar is extraction.

Q. You say that private firms have carried out certain minor schemes regarding hydro-electric power surveys, and have drawn up various projects which have not been carried out. Are there any special instances which you can give? Have you gone into the matter in detail?—*A.* The Katakhal for one, the Gogra for another, for improvement of navigation and drainage which I believe has been taken up by the Chief Commissioner of Assam and they are going to attempt something on the Borak river.

Q. Has any reference been made to the Local Government by your association for instance on the subject?—*A.* They have from time to time. The Commissioner and a number of planters visited Gogra river in connection with its improvement. I think something has been sanctioned.

Q. You mention corundum in the Khasi Hills. Is it not being extracted now?—*A.* I think some firm has a monopoly. For many years we used to buy what the Indians call *korond pothal* in the bazaar for our carpenters for sharpening their tools.

Q. Did it answer your purpose?—*A.* Yes They were crude blocks which are set into a piece of wood.

Mr. A. Chatterton.—*Q.* Have Messrs. Ede Bros. any workshops at Silchar?—*A.* Yes.

Q. How many men do you employ in normal times?—*A.* Actually in the workshop anything up to 50. We do a good deal of work both in Assam, Chittagong and Surma Valley. We used to do contracting work, boiler makers' work, etc.

Q. You are mainly connected with the tea industry?—*A.* Yes. In fibre factories, tea factories, oil factories, etc.

Q. How many apprentices have you in the workshops?—*A.* At the present time we have got 12 apprentices.

Q. And 50 workmen?—*A.* I do not think there are 50 workmen just at present. When there is no war we have fifty or more, sometimes over 300.

Q. You undertake what they call millwright's work?—*A.* General contracting, and civil engineering work.

Q. Most of the contract work would be in the nature of millwright's work?—*A.* Would you call building bungalows millwright's work?

Q. No, but working machinery for a tea factory?—*A.* We do a lot of that. We receive a retaining fee from a lot of companies for doing that work.

Q. For the millwright's work specially do you have to employ European fitters, or millwrights or is it done by your *mistries*?—*A.* We have no Europeans, at present. We have had as many as six men at a time before the war.

Q. These boys whom you train as apprentices—do they become fit to take charge of a millwright's job?—*A.* Last year I sent one head motorman and five men to put up a motor electric installation in a new factory. I was on that factory for four days; we completed the work and were paid without any comment.

Q. You were there?—*A.* Yes. I was up there for four days, to see the work started.

Q. You mention in your written statement that a great deal may be done for the irrigation of land in the cold weather all along the banks of the bigger streams, and you say that you have made experiments in that direction?—*A.* Yes.

Q. What areas are you contemplating the irrigation of in that way?—*A.* It will run into thousands of acres. You will have to use oil engines and pumps throwing 10,000 gallons an hour.

Q. What size would that be?—*A.* Four-inch delivery pipe.

Q. Is there anything of this kind being actually done beyond your experiments? Are there any cases of pumping from rivers?—*A.* Not on this scale. On the various tea gardens they have small pumps.

Q. That is for supplying drinking water. But are any used for irrigation?—*A.* To irrigate small areas and not big areas as far as I know.

Q. Would you consider it the function of Government to introduce these engines and pumps?—*A.* Unless you can find somebody else who is enterprising enough to put in capital.

Q. Have you or any other firm or have planters or any one else attempted to do anything in this direction?—*A.* I do not think beyond ourselves. I made rather a hobby of this sort of thing, in spare time. I am very fond of gardening and that sort of thing and I took up a certain amount of land, planted jute, potatoes, and sugarcane and things like that, and we had several engines and pumps that were doing nothing and I put the pump down near the river and I laid down a pipe and an oil engine, and I have laid pipes all over the place.

Q. What is the area?—*A.* The actually irrigated area would not be more than two acres. It is only a small experiment.

Q. Would you recommend the supply of engines and pumps on hire purchase system?—*A.* I would recommend a start in a small way.

Q. Would you recommend it to be continued once it is demonstrated to be useful?—*A.* Most decidedly. We are just dying for want of something of that kind. I had a talk with our Commissioner, and he was very much in favour of it, and Mr. McKay who is the Deputy Superintendent of Agriculture for Assam came over to see the work that my men were doing in the way of irrigating the lands.

Q. You would strongly advocate that hire purchase system should be introduced for the supply of machinery and plant?—*A.* Yes.

Q. That is somewhat different from what you state here. You are a strong advocate of apprenticeship system. You have told us what pay you give your apprentices to start with. What is the pay of the workmen in that part of the country? What do these boys earn when they finish their apprenticeship?—*A.* Some of them are earning Rs. 50 a month.

Q. You mean immediately they finished the apprenticeship.—*A.* We reckon a boy as an apprentice for ten years.

Q. At the end of ten years?—*A.* Rs. 15 or 20 a month according to his ability.

Q. If he is a fitter?—*A.* It depends upon the district, and it depends upon the man's ability. If he is a good hand he will get Rs. 20.

Q. You draw our attention to the deterioration of the rivers of Assam. What is this deterioration generally due to? Are they silted up?—*A.* All rivers tend to become more crooked and with the less gradient the more shallow they get.

Q. Is it practicable to do anything to counteract it?—*A.* In the case of some rivers by removing rocks and cutting a few of the bends. It is practicable to do a good deal, but it is a question whether it would be a commercial success, and whether funds are available.

Q. You think that Government do not do enough to maintain the waterways? *A.* They do nothing.

Q. Do they do nothing because it is not practicable to do anything?—*A.* I am afraid they have not got funds. Our association has tried several times to assist in blasting some rocks, but it is so little that it is hardly worth notice.

Q. Are these rocks in the deltaic part?—*A.* Yes. They are mostly laterite. They are not primary rocks, or anything of that sort.

Q. Hon'ble Pandit M. M. Malaviya.—You say in reply to question 14 "Government should not run, or aid a new enterprise which is likely to interfere with the expensively imported and trained labour of an existing enterprise." When you want to develop an industry you have to make the production cheap and if you do not want to compete with the expensively imported and trained labour you may not be able to produce things cheap. Will not industry then suffer if the view which you advocate is adopted?—*A.* I do not take it that way.

Q. Let me give you an illustration. Take paper pulp. The Surma valley is suited for paper pulp industry? Is it not?—*A.* Yes.

Q. In some other countries, they make a good deal of paper pulp, and if you want to produce paper pulp which would compete with that made there, you will have to make your establishment as little costly as possible. Now, if you have some firms working very expensively and if the Government does not help the new enterprise the result will be that foreign trade will continue to monopolise your market?—*A.* What I wish to say is that a lot of our industries have, at a great expense, imported and trained a lot of labour, and they do not wish to see other industries being started and taking away the labour on which they have spent a great deal of money. If Government are going to start an enterprise and bring in their own labour and do not interfere with the labour which has cost a lot of money to import and a great deal more to train,—they do not want that to be interfered with, but beyond that we should welcome any new industries which are going to develop the district.

Q. You say, "People in trade prefer as a rule to have their own representatives, and most of them do." Do you think that a trade commissioner in London will help the industries of Assam?—*A.* I do not think that it would make much difference to the tea industry. We have got our tea association and most of the bigger concerns have their own experts.

Q. You say, "There are half a million acres of Forest reserve in this district; among this land there are many thousands of acres of Bhils which will never grow good timber; these should be thrown open to cultivation." Do you know what stands in the way of these being thrown open to cultivation?—*A.* The Forest Department.

Q. Nothing else?—*A.* No.

Q. You think that the matter has not been properly considered by Government?—*A.* I would not like to say that. I suppose the Forest Department have their own views on it. I am speaking only from the point of view of the Association I am representing.

Q. Has any representation been made to Government on this head?—*A.* Yes, by the Tea Association.

Q. With what result?—*A.* None.

Q. Was no reply received?—*A.* We received a reply in the negative.

Q. How long has this matter been agitated?—*A.* For some years.

Sir F. H. Stewart.—*Q.* Did your Association ask it to be thrown open for tea cultivation?—*A.* Not entirely for tea cultivation, but generally. I may say that there were some hundreds of applications for this land both from the European tea gardens and from native joint stock companies, etc. There were about 20,000 acres of flat and the idea of the Tea Association was to get this land opened up and to give what the Government might decide as the proper percentage to recognised villagers and open that up in a scientific way.

Q. Are you in a position to send us a copy of the application that was made and the answer that you received?—*A.* I shall have to refer to my Association. It would be better if the Secretary of the Commission addressed a letter to Mr. W. Cooper, Secretary of the Surma Valley Branch of the Tea Association asking for the correspondence on the subject.*

Hon'ble Pandit M. M. Malaviya.—*Q.* Have you a sufficient supply of labour generally for your tea business?—*A.* As far as we are concerned (Ede Brothers) there is no labour question in India; so long as you treat your labour well, and pay them well you have more labour than you require.

Q. How do you obtain them? Do you obtain them through sirdars or do they come to you voluntarily?—*A.* A majority have come up voluntarily. If we want a large number of men for any particular work, say, for a drainage contract, I send my man out and he goes to Behar and other places and brings the men and they come down here during the cold weather and we give them medicines and that sort of thing and we get as many men as we want, and we never had any trouble as regards labour.

Q. Do they come for the cold weather only?—*A.* We do that work in the cold weather.

Q. You house them yourself? Don't you?—*A.* As a rule they put up their own shelters in the cold weather.

* *Vide* Appendix A.

Q. Do they come with their families ?—*A.* No.

Q. So far as you are aware, is that the general practice, or is it special to your firm—this voluntary coming ?—*A.* So far as I know, it is found in the Mangaldai district in Assam, and in East Duars district and in parts of Cachar. In Cachar in the cold weather a very large number of men come up of their own accord and there is no trouble in getting labour provided you let them earn a living wage, and a good man doing drainage work should be able to earn at least one rupee a day.

Q. These are not necessarily for tea plantations but for other purposes ?—*A.* For the draining of tea gardens or any other land. Our work for the last thirty years has been the development of tea gardens and the draining of Bhils.

Q. Have you any experience of the coolies employed in growing tea ?—*A.* Yes.

Q. Do they come voluntarily or have you to employ sirdars to get hold of them ?—*A.* In some gardens they come quite voluntarily.

Q. What would be the percentage of those that come voluntarily ?—*A.* It depends very much on the district. Almost invariably we have a headman who can speak the language and knows what the sahib's methods are. The ordinary cooly cannot know that. The coolies do not come individually but they come in groups.

Q. Is it the headman who persuades them to come ?—*A.* They come up there. We do not know who persuades them to come. The headman turns up at the office and the sahib wants the work to be done.

Q. You do not know who persuades them but they come through the headman ?—*A.* Yes.

Q. Is the Workmen's Breach of Contract Act in force in your district, and are those coolies who refuse to work or who want to run away, taken before the magistrate and punished ?—*A.* I think it has expired. I think the Act—Act XIII I think it is—is very very rarely enforced. I am referring to the Surma valley district, and not to Assam.

Q. In your experience this act is not much put into force now ?—*A.* Many gardens have not put it into force at all. A large number of gardens have now paddy land and sugarcane land. A man comes and says, " Give me a bit of land and I shall settle there and I will hoe and pluck tea for you" and there is a mutual arrangement effected between both the parties. There is no compulsion at all. It is just like a happy family. They get medicines.

Q. Then the work in the Surma Valley will not suffer if this Act were done away with altogether ?—*A.* Act XIII ?

Q. Yes.—*A.* They go right up to the end of the district where they can get fish and rice cheap. They are tired of one garden and they gravitate to their own country and they make a little money and go out and buy a bit of land.

Q. Do you mean to say that in the outlying districts the Act is needed ?—*A.* Yes, specially for new companies.

Q. Have you any experience of these outlying districts ?—*A.* I have been all over Assam.

Q. What percentage of men do you think would be required to be dealt with under the Act in order to work there ?—*A.* The percentage of the whole province.

Q. Of the outlying districts ?—*A.* It is more the outlying gardens than the outlying district. In the outlying gardens if you apply it at all you have to give the manager the option of applying it to the whole labour force, and he would naturally apply the Act to a new cooly, but if he is acclimatised and becomes accustomed to the work on a tea garden, you have some difficulty in getting him to go away.

Q. It is only in the earlier stages when he is not acclimatised that he wants to run away ?—*A.* The cooly that comes up to the tea gardens, is often a man who should be in jail. But he comes up to the gardens and he is trained in discipline and he is taught what it is to be honest.

Q. I do not know that you get many of these coolies from men who would be in jail. Many of them are simple villagers who would not be in jail.—*A.* I am referring to some of the Arkatti coolies.

Q. Their recruitment is prohibited now in Assam ?—*A.* Yes.

Q. I am asking you about those who come under the present Sardari system, those who you think would run away if they were not afraid of the punishment that would be inflicted on them under Act XIII ?—*A.* On certain gardens I quite think so.

Q. You say that every factory is the best type of a technical institute ?—*A.* That is for our district.

Q. I take it that apart from these factories there is no school which would train these craftsmen for their work ?—*A.* There are quite a large number of minor industries that are carried on by Indians.

Q. I am speaking of schools. There are no industrial schools ?—*A.* The schools in our valley are practically all run by Government.

Q. Are they giving any manual training ?—*A.* We must start with a man who is young. An old man you could not do anything with. You must start boys at the age of twelve, and they become the best men.

Q. You say that all firms should run their own industrial schools entirely under the own control ?—*A.* Firms like our own.

Q. Do these firms, generally speaking, have their own industrial schools ?—*A.* I could not tell you. We are about the only firm of this class in Assam. I do not think there are any more running on the lines that we do. The railway workshops and other enterprises which are more or less State-aided have industrial schools.

Q. Do you think that if you had industrial schools run by Government on proper lines that would be of advantage to your industries ?—*A.* What work are you going to give them.

Q. Work for which you train them ?—*A.* When they come to me from the Government school I have to start and train them again. The training that they get in the Government school is not the training that they get in the shop.

Q. You are speaking of the present Government schools but suppose that there was some manual training given to the boys ?—*A.* I do not think that would be any use for practical work. You can learn practical work under practical men who are earning their living by doing that class of work.

Q. You recommend that boys should go to school from the age of six to twelve and after that they should be sent to a factory ?—*A.* Yes.

Q. Instead of being sent to the factory suppose they were sent to a school with a workshop attached to it ?—*A.* These schools or Government workshops make toys and models and there is no use for them. If you want to train them, the higher technical school comes in, and it is a college and not a school. You train them in higher science pure and applied for higher appointments, but the higher appointments are not there in any number at present and what are you going to do for those students ?"

Q. You suggest the elimination of malaria as one of the most important aids that can be given to industries in the Assam province. Does this apply to the whole of your Surma Valley ? —*A.* I should say usually to the whole of the Surma Valley and Assam. I know it is a great trouble. In the rains for about 2 or 3 months we have 25 per cent. suffering from malaria of some sort although we give them free quinine.

Q. How long does this epidemic last ?—*A.* With many of your caste people it is rather troublesome. You have to be very careful not to upset their caste prejudices and you cannot compel a certain class of men to take quinine, but some of them may volunteer to do it.

Q. How long does this season of malaria last ?—*A.* It varies a great deal with the way a man lives and his surroundings.

Q. Can you give us an idea of the percentage of men you lose by malaria ?—*A.* I suppose we lose at least two per cent. by deaths and 20 per cent. from incompetent work—from malaria and anæmia combined. We have to keep double the number of men that we actually require owing to sickness, etc.

Q. Referring to colleges of commerce, you say in answer to question 80 "No. There are plenty of very good ones already." I am not aware of any college of commerce here. What did you refer to ?—*A.* I do not think that our province is sufficiently advanced for the establishment of a college of commerce.

Q. But when you say that there are plenty of very good ones already what do you refer to ? Not to colleges of commerce ?—*A.* Not to our province.

Q. In answer to question No. 105 you say "We had to pay forest dues on bark, saw dust and bad wood." Did you make any representation to Government on this point ?—*A.* We had an association of saw millers and we made a representation to the Forest Department without much effect.

Q. When was that ?—*A.* That must be twenty years ago now.

Q. Since then do you still continue to be charged ?—*A.* We closed our mill because we could not make a profit on it.

Mr. C. E. Low.—*Q.* Act XIII of 1859 applies to coolies against whom advances are outstanding and who leave their employment ?—*A.* Yes.

Q. Only in respect of coolies against whom advances are outstanding ?—*A.* Yes.

Q. Are there any Assamese engaged in industries in Assam of this type you mention ? You are speaking of petroleum and coal. Are there any Assamese doing that, or is it all done by people from outside Assam ?—*A.* I do not know of any Assamese raising petroleum. I cannot be quite certain about coal. There is a small coal mine being worked by an Indian in the Sibsagar district.

Q. Can you tell me what forest dues are paid on saw dust and how much on bark ?—*A.* It depends on the class of wood. I was referring principally to tea box making. You buy a log as it comes from the forest measured by the Forest Department by the girth.

Q. Your statement is a little misleading from my point of view. I am only asking what the Forest Department charge on saw dust and bark. The point is, how much do they charge on them or whether you are charged on the whole tree.—*A.* They charge one anna a cubic foot on the whole tree.

Q. I thought the recent practice for some years was to charge so much per box.—*A.* In Assam proper they are doing that now.

Q. Which do you prefer?—*A.* We have closed down our mill.

Q. Did the Forest Department assign any reason why they refused to relinquish the flat that you are speaking of?—*A.* The correspondence in the matter did not pass through my hands.

Q. Would you give us the name of the flat for reference?—*A.* Hattital, Katakhal Forest Reserve.

APPENDIX A.

Dated Jaffirbund, the 11th January 1918.

From—W. E. D. COOPER, Esq., Secretary, Surma Valley Branch, Indian Tea Association,

To—The Secretary, Indian Industrial Commission.

In reply to your letter No 4468,* dated Gauhati, the 5th instant, asking for particulars in reference to a case in which the Forest Department refused an application for taking up a flat of 20,000 acres for cultivation in the Katakhal Forest Reserve,—I have the honour to forward for the information of your Commission, copies * of some correspondence, that had passed between this Branch of the Association and the Government of Assam, on the subject of deforestation of lands suitable for tea cultivation.

I, as representative of the Tea Association, was one of the party that examined this land in company with Mr. Ede and others in 1913, and though I can find no correspondence in this office to show that Government refused to take any part of this area out of reserve, this has not been done, and I have no knowledge of the reasons given by the Forest Department for objecting to it. Applications for portions of this land have, I know, been put in for many years by various tea companies in this district.

WITNESS No. 390. *Hon'ble Babu R. M. Dass.*

HON'BLE BABU R. M. DASS, *Karimganj.*

WRITTEN EVIDENCE.

I would prefer to give my views from the top of the ladder rather than its bottom, I mean the machinery which is to guide the action of the State with regard to the industrial development of the country.

Necessity for such an organisation requires no argument. The State cannot afford to neglect the many problems, I would say the increasing number of such problems, that are bound to crop up with the industrial progress of the country. (Labour must be regulated and protected, technical education must be organised and assisted, new industries will require encouragement, cottage industries will have to be organised on modern lines. These are recognised duties of the State.)

Official organisation.

I would for this purpose like to have a Board of Development in each province, with a similar Board in the Government of India. The provincial Board should consist of a Chief Officer or Chairman or any other name given to him, who should be a tried man in the principal business of the province. By principal business I would mean something different from agriculture: that branch of industry should be left entirely with the Department of Agriculture. Other members of the Board should be an agricultural expert, a specialist in statistics to guide the collection and dissemination of all statistical information. This is another appointment that I would like to see created at once. He should be a man who will have both a theoretical and a practical training in the handling of statistics with a thorough grounding of the principles of economics. He should receive a course of training under the Director of Statistics of the Government of India. He might be named statistical officer and need not be an expensive I. C. S. The fourth member is to be the Registrar of Co-operative Societies. Here also I am opposed to an Indian Civil Service officer not only in consideration of the cost but also because I think that an Indian who knows the business, has studied it and takes a real interest in it will do it better than anybody else and the public expenditure will be less. The Sanitary Commissioner and the Chief Engineer and the Director of Public Instruction may be co-opted extraordinary members whenever their advice might be required. The constitution of the Board is to be therefore as follows:—

Constitution of the proposed Board of Development.

Chairman.

An experienced businessman.

Members.

(1) Chief Agricultural Expert.
(2) A Statistical Officer and Secretary.
(3) The Registrar of Co-operative Societies.

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*Not printed.

Extraordinary Members.

(1) Sanitary Commissioner.
(2) Chief Engineer.
(3) Director of Public Instruction.

I would entirely abolish the appointment of the Director of Agriculture and in such provinces where he is also the Director of Land Records, the latter part of his duty may be transferred to the Excise or some other Department.

Registration of joint stock societies should also be placed in their hands.

Government assistance.

As I have said the Board will advise the Government in all matters relating to industries. But in the matter of assistance to industries the principle must be definitely laid down. I will discuss each kind of proposed assistance separately.

(1) Grant-in-aid.

This can only be given where the gain accruing, benefits chiefly the masses, *e.g.*, which on the lines of Japan, would undertake to organise match industry in the country. This, I foresee, can with great success be started in the Khasia Hills, whose beautiful pine forests would give an ample supply of wood for match making, to whose want is ascribed the failure of the first attempts at working match factories in and near Calcutta. Where the masses benefit, Government may give grant-in-aid and not where a few persons or capitalists are trying to add to their wealth, for one of the chief duties of States in modern times is to combat the evil effects of the otherwise beneficial competitive and capitalistic system of industry. The old age pensions, the eight hours working day, labourer's compensation, schemes of insuring against unemployment are only some among the many duties which the State has been forced to undertake under capitalism. In India the special problem of the Government till now is to create a diversity of industries among the masses. Grant given towards any well organised and approved attempts like Mrs. Graham's at Kalimpong, would be a good investment for State. Nothing that helps to mitigate the dreadful scourge of famine can ever come amiss. I would limit grants-in-aid to such schemes only.

Subsidies are demoralising. Bounties may only be useful where it is necessary to export home-products or when the export trade of the country is threatened by bounties of another Government. But so far as practicable such bounties should be financed from funds raised by compulsion from the members of the trade themselves. There is no reason why the public money should be spent for the benefit of a minority unless there are strong grounds for suspecting that any foreign Government or merchants' association is trying to kill the trade of the country by special bounties or subsidies. But a better course would of course be a countervailing import duty. But such duty can only be of use when there is an industry to protect.

(3) Guaranteed dividend.

The principle underlying guaranteed dividend is that such industries, *e.g.*, railways, etc. which benefit all or most classes of people should be organised even under such conditions. But I cannot think of any other one industry which can come under the same category as the railways. Industrial banks may be organised with profit on similar terms.

But Government can do a great service to industries if after careful investigation and study, the Board can authoritatively declare that a certain industry started with such capital, etc., would yield a maximum of such dividend. A declaration from Government would both attract enterprising capitalists and make it much easier to raise capital for a joint stock company for that industry.

(4) Loans.

Loans of money cannot be advised. Government cannot and need not take such risks. This part of the work would be better done by the starting of industrial banks which would profitably advance loans to industries and know how to handle them without risk. Government may of course give loans or keep deposits in such banks, but the State hardly possesses requisite machinery for working such a banking business. On the question of banks I will give my views separately.

(5) Machineries may be lent to the small capitalist on the hire-purchase system, and this would be highly beneficial in cottage industries where the people labour under ignorance and want and fail not only to select the right kind of machine but to find money for buying them. Government might often easily induce the manufacturing firm to sell machines on a hire-purchase system. In case of the larger industries, Government need not deal directly with the industry but negotiate on its behalf with the manufacturing company.

(6) Subscribing shares except in industrial banks is not advisable. Unless the Government undertake to start industrial banks on their own initiative, they may help to found them by agreeing to subscribe a limited number of shares. But a guaranteed dividend would be more economical.

(7) Guaranteed purchase of stores by Government.

This should be done as such encouragement is not only desirable but one which nascent industries cannot do without. Government would not lose. With proper description given, the right kind of thing would be gladly produced, whose profits would give them the opportunity to risk competition with the outsider.

Pioneer factories are sure to set excellent examples for imitation. The Madras aluminium and chromé leather factories have definitely proved the future of those businesses. It is a very common experience that when an industry succeeds the timidity of Indian capital will go, so far as that industry is concerned. Pioneer factories.

Tea has succeeded and money for capitalising tea concerns is being gladly subscribed. Failure adds to the timidity of capital and the effect is enhanced if it happens in the first attempts. People have no patience with pioneers. Their failure scares away more capital than a failure in an established industry like tea. Therefore if the treacherous ground of pioneering be passed over by factories started from public funds, the work of continuing the work becomes easier.

I will confine my attention to Indian concerns alone. They suffer in most cases from being under-capitalised, unlike the American trusts which are over-capitalised. Many industries are known to be in a moribund condition because they have not the capital to provide themselves with up-to-date appliances. Present method of financing industries.

I would suggest that the Board should as well publish from time to time schemes of various businesses obtained from experts in those businesses. The managers of industries might be given the opportunity of having their schemes criticised, for which a small fee may be charged.

All cottage industries require to be organised on the co-operative system. They are required for two purposes, *viz.*, (1) to organize the sale of the products, (2) to organise the purchase and regular supply of machineries and raw material whether through the Government or independently. I would explain my position with reference to the bamboo mat making industry around Karimganj. This seems to be the only auxiliary business of the Namasudras here. These people fail to gain a good income because first of all they cannot purchase their bamboo as cheaply as they ought to and secondly they cannot bargain on reasonable terms with the wholesale dealers. Being without the means to wait, they are obliged to sell the mats for what they will fetch; and the merchant takes advantage of any difficulty, that the caprices of the seasons might put him to, to lower the rate. The struggle is extremely unequal for the mat maker depends on advances from the merchants for buying his bamboo. If they could be combined into a co-operative society and get their supply of bamboo direct from the forest, they could get them much cheaper. If the Society further undertook to sell their goods and made advances to producers in anticipation of sale, their profits would be much increased. The same arrangements would greatly increase the profits of hand loom weavers and make the business more attractive. In fact these two defects, *viz.*, of procuring raw materials and of marketing products will have to be met to make cottage industries commercially successful. Co-operative Societies.

Newly started industries struggling into existence are badly in need of technical aid and for this—like Japan—intending experts may be sent abroad : researches may also be encouraged. Technical aid.

Technical aid to industries is imperatively required, especially in those unorganized industries which unlike tea, have no scientific department of their own. In established larger industries much may be left to capitalists to arrange and provide for, but there are others specially those struggling into existence which would require to be advised by experts from time to time. In Japan we are told they have solved this difficulty by arranging to send intending experts to foreign countries and helping them with such further assistance as the influence of the State is able to give them in solving their particular problem. In some industries one small thing will mar the whole, one small trade secret that an expert has failed to pick up will practically spoil his whole enterprise. Such problems can sometimes be solved by experts whose advice may be procured by the Government for money. Government experts might be in a position to give them that assistance. Post-graduate and research colleges might sometimes solve some problems, existing experts might, if sent out on a tour of inspection to foreign countries, pick up exactly what was lacking. But in all cases in which technical advice is obtained through the Government or experts appointed by Government or gentlemen sent abroad at the expense of Government the advice so obtained must become a public property and should be published in trade journals and bulletins.

Factories to demonstrate improved and up-to-date methods of manufacture need only be opened when the masses have to be taught to give up their older methods. Demonstration so made will be more effective than the most widely circulated bulletin, the most energetic missionary. The experience of the Agricultural Department is exactly the same. Field demonstration is easily accepted, but lectures and books are generally received with distrust. Teach a village weaver the use and advantage of an improved loom, the rest would easily be induced to follow him. I would only repeat that improved machineries must be supplied on a hire purchase system. Singer sewing machines have been made popular by this system of sale alone. Demonstration factories.

The sale of country-made goods could be greatly increased by the opening of commercial museums at centres of trade. Not only the price of the goods but the place from where they are to be obtained should be noted. Museums and exhibitions.

Exhibitions should be so designed as to serve the purpose of a museum and a demonstration factory. If such exhibitions would sell only articles of home produce, their sale would be increased.

Co-ordinating with the commercial museum, there need be an agency for the sale of those products particularly which have not yet been organised for the purpose of sale. Provision Sales agencies.

should also be made for the sale of other country-made products on a small commission: for unorganised or petty industries no commission need be charged.

Certificate of quality.

Yet another defect from which the cottage and other petty industries suffer is the want of any standard or quality mark. In those industries which can be organised under a wholesale selling society the work of quality mark may be entrusted to that society.

In other cases arrangements may be made at convenient centres for marking the quality of the goods. But difficulty in the matter seems to be great. The temptations of such an office will be very great; therefore, it will require the services of a well paid officer which the cottage industries may not be able to bear. But the Board may fix some basis of ascertaining the quality of the goods, which the producers may be compelled to adhere to in giving marks.

Banking facilities.

It is notorious how Indian concerns are handicapped for want of banking facilities Many companies that suffer from being under-capitalised might be greatly relieved of their difficulties if they could obtain banking facilities In Northern Bengal where the Indian companies are financed by banks started by them they can manage their business with a much smaller capital outlay. Therefore they earn higher dividends. Opportunities of banking business exist in all branches of trade and industry. But this is a branch of business in which a thorough grasp of the business, up-to-date information and supreme caution are required. It is a pity that the existing banks have so far helped Indian concerns but little. I will not impute motives. But the state of things has to be looked at with open eyes and remedied. Failure of a bank creates a vicious circle and brings ruin upon a much wider circle than failure in other business will cause. Caution has therefore been forced on all countries by legislative measures. Industrial banks may be started on guaranteed dividend and their working directed in the same way as railways. Banks affect such large and varied interests that such guarantee will not come amiss. For the work of control and direction as well as financial assistance I would suggest the creation of a State Central Bank for the whole of India. If the Central Bank would make advances and give loans on favourable terms I would hope the need for guaranteed dividend may not arise at all.

Training labour.

The dearth of trained labour is remarkable in India. I would suggest a simple method for improving the quality of labour. After an apprentice has received a preliminary practical training he might be given an idea of those principles which he ought to know for an intelligent working of those machines and implements. The present method of theoretical first and practical afterwards, has the fault of attracting the half-hearted who fight shy of practical training. I would prefer to give the practical training in actually working workshops rather than in schools. This can easily be arranged, if it be a condition of all technical advice and assistance from Government that they must give practical training to a limited number of students every year, the number being determined by the size of the workshop. Neither do I find it unreasonable if law would make it compulsory for every factory and workshop to open their doors every year for a fixed number of apprentices to be sent by the Board.

Evidently I would have industrial schools as well for theoretical training. In the higher grades of industrial training I would think a theoretical knowledge would preferably precede practical, but in any case students should, after actual factory training, have the chance of receiving further instruction whenever they find, themselves faced with difficulties. In the higher grades as well as the lower, the industrial schools must of necessity, have its own workshop.

The control of the industrial school should preferably be left to the guidance of the Board, the Department of Education being represented in the Board by its Director.

Assistance to managers to study condition abroad.

This may be given in two ways :—

(1) they may be sent as stipendiary of the Government, or

(2) the Government may only undertake to obtain for them such facilities as is possible by the exercise of their influence.

The first kind of assistance will only be given to those industries that are new and those in which there is a widespread want of up-to-date skill and methods. But in all cases, they would be required to publish the results of their enquiries. Public money must bring a public return.

Loan of experts.

Whenever the Government can offer it, experts may be lent to private companies on such terms as to service as the Board might find fit, but the results of all researches by such officers shall be made public and shall be published for general information. That will be the only benefit that the public will obtain in return for such services and help.

Prevention of adulteration.

In certain trades adulteration has assumed such proportion that it must be put down with a strong hand. Ghee, oil and milk are the worst handled. In case of imported goods it is easier to stop misdescription if only the Custom House will insist on admitting no goods that are misdescribed or are adulterated.

Factories may also be similarly regulated. But the petty artisan and vendor are the most difficult to control. A carefully organised department of experts will have to be formed if the work is to be undertaken. But the need is great and pressing. When this is done, the question of insisting on putting standardised marks of quality will be easy to regulate with the same machinery.

If a Department of Statistics, I mean for the careful collection of all accurate and faithful statistics, specially commercial, be established, they must also be entrusted with the above works. Statistics.

It is notorious that our market rate statistics are collected by agents and compiled by people who have no idea of the importance of the work they do. It is not enough to have a Director of Statistics to handle and explain the stupendous figures. There must be properly guided organised agency for collecting and distributing them. Every student of economics knows how unreliable many of the most important Indian statistics are and how foolish often it is to base one's conclusions on them.

Moreover statistics are seldom made available to general people in a way that may be useful to them. Much useful information is published in a way that to the majority of people interested are as good as not. Statistics will often appear in annual reports a year and a half after they are collected. The chief remedy lies in starting trade journals in each province, summaries and, if possible, translations of all articles being made available in the principal vernaculars of the province. Articles should be paid for and the subscription of the vernacular editions of these journals must be put at a very moderate sum.

To start with I should like to see a monthly journal in each province, with the ultimate aim of turning them to weeklies in course of time.

Where private enterprise would come forward to undertake a trade journal Government might regularly supply them with such information as is necessary and desirable. Government might further commend such papers to the public and offices subordinate to them, schools and colleges. No further help is desirable. Even in this case I would insist on an organ of the Board itself.

Monographs may be popularised by the combined method of publishing them in the vernaculars and demonstrating before the people their practical value. I would like to see the translations free from those absurd compositions which only end in exciting ridicule and contempt and is preserved if at all as a curio. Popularising monographs.

So far as the interiors are concerned I would like to see a quicker increase in the number of Post and Telegraph offices. All sub-offices should have a telegraph branch as a matter of policy. Every circle which can possibly support a branch postmaster and a peon should get the privilege as a matter of right. Communications.

Want of roads is too well-known but a more serious handicap to trade has been the silting up of many waterways. I would mention only one, *viz.*, the old Barak branch in the Barak-Kusiara river—passing through the centre of the Habiganj sub-division of the district, connecting the interiors with the principal neighbouring marts like Balaganj and Bhairab Bazar. This waterway, if dredged and reopened, would not only improve trade but relieve agricultural people of the whole northern half of Habiganj, of the danger of annual inundation. In low-lying tracts below the flood level more useful means of communication are canals not roads; while canals would afford a means of communication for all seasons of the year, a road is useful only in winter. The embankment of a canal would serve the same purpose equally well. I would therefore suggest that Local Boards and Government do declare it their policy to construct canals in suitable localities and to take them up rather than roads as a matter of policy.

Railways have not as yet succeeded in connecting all the principal markets of internal trade. In Sylhet, Balaganj, Ajmirganj and Chhatak are far from any railway line. The proposed feeders will be of some help. Railways.

Reduction of railway freights to help nascent industries may often be beneficial. But all such reduction must in each particular case be done with the sanction of the Government. The unholy combination of trusts and railways in United States of America points a moral too dangerous to be forgotten. I would limit this privilege to cottage industries alone which are labouring under special disadvantages. They would not be able to turn this well meaning concession into a dangerous weapon for strangling rivals out of the business.

But in case of raw materials whose supply has to come from a long distance by rail a special reduction is necessary. It has sometimes been known to happen that Calcutta has preferred to get her supplies of raw material from Europe rather than the Central Provinces.

Railway freight will account for a large rise in the price of Ahmedabad piece-goods in Calcutta and this has therefore been the subject of complaint by Indian merchants. Though it may not be possible to reduce railway freights to the level of marine rates, they may be considerably reduced. In view of the fact that Indian railways are earning high dividends, reduction of freights would fittingly be taken up now. Such reduction would help to keep the increased freight diverted to railways by the abnormal rise in ocean freights.

Yet another point that I venture to submit is the relation that ought to exist between railways and steamer lines with ordinary distributing trades. When railways and steam lines or their managers are interested in business carried through these lines, the result seems to be to foster an artificial monopoly in those branches of business.

Rival concerns fail to secure, very naturally too, cargo boats which means a failure to carry out a contract for supply. I speak from actual cases that I happened to know. I would like to see the law of the land make it illegal for rail and steam lines or their managers to carry on ordinary business and to take away from them the right of discriminating between customers both as regards the rate and the facility of shipment. The lesson of the United States

of America and our own experience in this country ought to make us wiser in our dealings with monopolistic concerns of the type of railways and steam lines.

ORAL EVIDENCE, 3RD JANUARY 1918.

Mr. C. E. Low.—*Q.* You don't propose to have any people with any knowledge of industries in the Board of Development which you recommend, Mr. Dass, I understand. You propose a Board of Industries with a business man as its chairman, whatever that means, and an Agricultural expert, a Statistical officer, the Registrar of Co-operative Societies, the Sanitary Commissioner, the Chief Engineer, and the Director of Public Instruction as members. You have got about 6 officials without any knowledge of industries as far as I can see, and a business man as chairman. Where does your expert knowledge come from?—*A.* I have proposed an experienced business man.

Q. Will that one man do? Then what is the good of all these men being members?—*A.* The Agricultural expert will be an expert in industries, the Statistical officer will be an expert in statistics, and the Registrar of Co-operative Societies must be an expert in industries. I have explained my position fully in the written note.

Q. Then in your note, referring to technical aid to industries, you talk about sending intending experts abroad, and you go on to say "existing experts might if sent out on a tour of inspection to foreign countries pick out what was lacking." What do you propose exactly about these experts? Are you going to wait until these experts are trained, or you are going to get other experts first?—*A.* I mean that this Department will be under this Development Board and this Board will select.

Q. Will they select intending experts or actual experts?—*A.* They will select whom they prefer to send.

Mr. A. Chatterton.—*Q.* Have you had any experience of industrial work, or are you a business man?—*A.* I am proprietor of tea gardens. I have also some experience in industrial work in this way. I started some small mills and small companies here. We started one weaving company at Sulkia by the name of the Calcutta Weaving Company, Limited.

Q. Is this weaving company going on now?—*A.* No.

Q. How long ago was it started?—*A.* It was started about 10 years ago.

Q. How did you run this company? Was it a handloom weaving company?—*A.* No, it was machine loom.

Q. Were they driven by power?—*A.* Yes.

Q. How many looms were installed?—*A.* We had 36 looms at that time.

Q. Did you have any subsidiary machinery such as warping machinery?—*A.* Yes.

Q. How long did the company work?—*A.* Only for 3 or 4 years at the most.

Q. Why was it wound up?—*A.* For want of co-operation.

Q. Co-operation with whom?—*A.* With the public. It was due to want of funds.

Q. You were unable to sell your products?—*A.* No, Sir. At first the company did very well, but later on when it felt the want of funds it was handed over to some other party and they mismanaged it: they said that they could not go on owing to want of funds.

Q. What became of the machinery and plant eventually?—*A.* That had been sold in public auction by the court and it was purchased by the owner of the land where it was situated.

Q. What is he doing with it?—*A.* Perhaps he also sold it away.

Q. Did you manage it in the beginning?—*A.* No, not at the beginning.

Q. How much money was put into this originally?—*A.* About ₹50,000.

Q. Was this factory in Calcutta itself?—*A.* Yes in Sulkia.

Q. You say in your note that you would like to abolish the appointment of Director of Agriculture, and you also say that agriculture should be left entirely with the Department of Agriculture. Are you going to have an Agricultural Department without a Director, or what do you mean?—*A.* Perhaps I meant agricultural work and industrial work will be in the hands of the Board of Development and form one branch of this rather than a separate Department.

Q. What I should like to know is this. Who is going to look after the Agricultural Department if the appointment of Director is abolished.—*A.* There will be the Agricultural Expert of the Board to do it.

Q. You don't want reduction in railway freights given to companies, but only to cottage industries?—*A.* What I mean is that reduction of railway freights will be very beneficial to the nascent cottage industries at present. Of course if Government can, reduction must be done for all concerned.

Q. You refer in your note to an unholy combination between trusts and railways in America: what was this unholy combination, and what result did it produce?—*A.* I have explained it in the last paragraph "rival concerns fail to secure, very naturally too, cargo boats, etc."

Q. What have cargo boats to do with the unholy combination of trusts and companies in America?—*A.* As for example here if a railway company or a steamer company are allowed to have any separate businesses, they will try to have their work done first. As for instance I know of one gentleman from our side who had to meet with some difficulty.

Hon'ble Sir R. N. Mookerjee.—*Q.* Can you cite any instance of such unholy combination?—*A.* Messrs. Kilburn & Co. for instance. One contractor from our side came here to take some coal; he could not take the terms offered by Messrs. Kilburn & Co. and he arranged terms with some other company, Messrs. N. C. Sircar or some company like that. At that time boats were not available because they could not supply boats without shipping their own coal. After a long period they allowed him a boat.

Q. Messrs. Kilburn & Co. did not allow their boats to a third man because they had their own goods: do you accuse them for that?—*A.* I do.

Hon'ble Pandit M. M. Malaviya.—*Q.* Will you please explain your meaning?—*A.* That was a special case.

Q. But will you please explain why you accuse them?—*A.* I accuse not only them but the whole system. If a carrying company is allowed to do other business like this, it will prefer to first load its own goods.

Hon'ble Sir R. N. Mookerjee.—*Q.* Can you give us any particular details, any correspondence that you had with them, to show that Messrs. Kilburn & Co., as public carriers neglected other goods in preference to their own? Have you had any correspondence with them on the subject?—*A.* Yes, I can.

Q. Will you take a note and write to the Secretary about it sending copies of the correspondence.—*A.* Yes.*

Sir F. H. Stewart.—*Q.* In what respects have you been chiefly interested in industries? Have you managed any industry, or have you only occasionally supplied capital?—*A.* I happened to manage some small home industries which all failed, such as hand spinning, hand weaving and machine knitting.

Q. Did you manage these yourself as a business man?—*A.* Yes, I did: but I cannot say, I managed them as a business man because these were all experimental and all failed for want of co-operation and also for want of labour.

Q. Are you a member of the local Council?—*A.* Yes.

Q. Are you a nominated member or an elected member?—*A.* Formerly I was a nominated member, but this time elected.

Q. Whom do you represent now in the Council?—*A.* I represent the landholders now: formerly as nominated member I was representing the mercantile community.

Q. Were these small industries in which you had been interested situated in Assam?—*A.* Yes, I speak for the Surma Valley.

Q. Do yon know anything about the working of Co-operative Societies in Assam?—*A.* Yes, the movement is slowly going on.

Q. Are there many societies?—*A.* No, not many.

Q. What industries are they promoting, weaving or what?—*A.* They are only just trying weaving looms; it is not yet fully successful I believe.

Q. Is there one for this bamboo mat making industry that you refer to?—*A.* No, they are managing their own business themselves.

Q. You say that demonstration is easily accepted: is anything done in Assam in the way of sending round for instance an expert weaver to show the weavers in the villages how to work?—*A.* Yes, I think some two or three students who were sent to Serampore to learn weaving are doing this with the help of one instructor.

Hon'ble Sir R. N. Mookerjee.—*Q.* Were they sent at the expense of Government?—*A.* Some at the expense of Government, and some at private expense.

Sir F. H. Stewart.—*Q.* With reference to this old Barak branch of the Barak-Kusiara river, has that matter been put before the Government?—*A.* Yes.

Q. With what result?—*A.* I do not remember exactly what was the reply given, but I think it was deferred for want of funds.

Q. Was it recently?—*A.* It was I think four years ago.

Q. Has anything been done since?—*A.* No, nothing.

Hon'ble Pandit M. M. Malaviya.—*Q.* You say on the first page of your note that the match industry can be started with great success in the Khasia hills?—*A.* Yes, I believe so.

Q. Have you in your mind the idea of starting a match factory, or do you mean that it should be worked in cottages?—*A.* I prefer cottage industries.

Q. Do you think that cottage made matches would be able to compete with the machine made matches which are now being imported?—*A.* I believe so if the pine wood was allowed to be used. The pine wood is available in Shillong hills.

* Witness subsequently wrote to the effect that no papers on the case were forthcoming.

Q. Do you think that making matches by hand and carrying through all the processes involved in doing so by hand would enable manufacturers to compete with foreign matches? —*A.* I believe so.

Q. Has this been tried on any scale at any time?—*A.* Somewhere in Brahmanbaria, I think, they were making matches by hand and they could sell it at less price; those sticks were very much like bamboo sticks or something like that but they could not do it very well.

Q. Do you think they could make boxes also?—*A.* Yes. Also at Karimganj this was tried by some man who was making these things by hand.

Q. Did he make it on a sufficient scale to enable you to judge whether it would compete with the machine made matches?—*A.* No. I prefer cottage industries because poor people will be benefited.

Q. You speak of industries in Japan, have you been to Japan?—*A.* No

Q. Then you refer to the bamboo mat making industry, this of course is a purely cottage industry, and this can be developed?—*A.* Yes.

Q. And you want only co-operative societies for procuring raw materials and for marketing the products?—*A.* Exactly.

Q. Does none such exist at present?—*A.* None.

Q. Nor is there any society for organising the handloom weaving industry?—*A.* No, not in proper order. Government is trying to do something in that direction.

Q. Do you think that if there were a few societies which would procure raw material to the weavers and also help them in marketing their produce, the handloom industry will receive a great impetus?—*A.* Certainly, I do believe it will.

Q. Are people already trained in weaving or will they require to be trained?—*A.* They were trained, but they require now to be trained.

Q. Was it the practice on your side of the country that even in high families ladies used to weave?—*A.* Yes.

Q. Is that practice still extant?—*A.* No.

Q. Is it entirely dead?—*A.* Entirely dead.

Q. Do you think that there is a reasonable chance of reviving it?—*A.* I believe so.

Q. Even in high families?—*A.* Oh, yes.

Mr. A. Chatterton.—*Q.* Are you talking of spinning or weaving?—*A.* Both, spinning for high families.

(*Mr. A. Chatterton.*—They are two different things altogether.)

Hon'ble Pandit M. M. Malaviya.—*Q.* They used to weave as well as spin in high families in Assam, was it not so?—*A.* In Assam they still weave as well as spin.

Mr. A. Chatterton.—*Q.* Do they still weave?—*A.* Yes, only *endis*.

Q. In silk?—*A.* Yes.

Q. But they don't spin silk, do they?—*A.* They do.

Hon'ble Pandit M. M. Malaviya.—*Q.* Is there no such thing as a weaving caste in Assam?—*A.* In Assam proper there is no caste like that I think.

Q. Do Brahmin ladies spin as well as non-Brahmin?—*A.* Yes, in Assam, but not in the Surma Valley. There is a weaver class in the Surma Valley.

Q. Is there any prejudice against spinning and weaving in the Surma Valley?—*A.* No, that is gone.

Q. Speaking about banking facilities you say in your note that the existing banks have so far helped Indian concerns but little: have you any personal knowledge on the subject or is that your general impression?—*A.* That is my general impression.

Q. You say that a State Central Bank should be established for the whole of India, and industrial banks should be started. What do you mean? Do you mean that there should be one industrial bank in every province, or more than one in important industrial centres?—*A.* More than one at important centres.

Q. You say in the last paragraph of your note "Rival concerns fail to secure, very naturally too, cargo boats which means a failure to carry out a contract for supply. I speak from actual cases that I happened to know. I would like to see the law of the land make it illegal for rail and steam lines or their managers to carry on ordinary business and to take away from them the right of discriminating between customers both as regards the rate and the facility of shipment." Would you take away from them the right of carrying on ordinary business, or what do you mean by it?—*A.* I mean business other than carrying business. They have still got their own other businesses.

WITNESS No. 391.

HON'BLE BABU RADHA BENOD DAS, *Pleader, District Court, Sylhet.*

WRITTEN EVIDENCE.

I think I ought to make it clear at the outset that I have no experience in the organisation or carrying on of any industry. But my ideas are those of a layman who has watched with keen interest the industrial development of the country and the industrial policy of the Government.

Capital at present is raised principally from the following two sources :— Capital.

(1) The land-owning class and

(2) The middle-class including the professional classes.

The purely agricultural classes have practically no savings, and when they have, their savings are, as a rule, invested in the purchase of land for extension of agriculture. I think the tea industry of the district of Sylhet has drawn some capital from this source, but it is negligible.

The one difficulty in the raising of capital for industrial purposes arises from the comparative security of investment in land. Instances of industrial failures within recent years are only too many in Bengal. People have little faith in the business enterprise of their own countrymen. They can hardly be held to blame, but, at the same time the maxim is true that "Failures, even costly failures, are the pillars of success." The lack of capital is, indeed, the greatest problem of the Indian industrial situation.

The new sources from which capital can be drawn are (1) Government, (2) the existing sources in far larger proportions than at present, and ultimately (3) British and foreign capital.

But the Government must take the lead by supplying capital to needy industries, on reasonable terms. At a recent meeting of the Assam Legislative Council, I moved a resolution, which was lost, to the following effect :—

That in order to improve the economic condition of the people of this Province, this Council recommends to the Hon'ble the Chief Commissioner that early steps be taken and a scheme be formulated to have an industrial bank established in some suitable place in this Province, with a declared maximum capital divided into shares and with limited liabilities on conditions *inter alia* :—

(*a*) That the said bank shall be under Government supervision and control.

(*b*) That the Government shall purchase a certain number of shares therein; and

(*c*) That the subscribed capital shall be devoted exclusively to—

(*i*) Financing the indigenous industries of the Province.

(*ii*) Establishing a model factory equipped with up-to-date modern scientific appliances for the purpose of manufacturing selected raw materials that are yearly exported from this province to other places for manufacture.

I adhere to the opinion that a bank established on these lines will be able to tap sources of capital hitherto unavailable for industrial purposes. Government may also reserve powers of general supervision over enterprises so financed, *e.g.*, in matter of audit, as also by requiring periodical reports as to the progress of the business. Such supervision may be entrusted in each province to the Department of Industry.

Other forms of Government aid may take the following shapes :— Other forms of Government aid.

(1) Bounties and subsidies.

(2) Guaranteed dividends for a limited period with subsequent refund to Government of the expenditure incurred in paying dividends at the guaranteed rate.

(3) Supply of machinery and plant on the hire-purchase system.

(4) Provision of part of share capital of Companies on the same basis as public subscriptions of capital.

(5) Guaranteed Government purchase of products for *limited but not necessarily short periods.*

(6) Exemption from income and other taxes for limited periods.

In all the above cases, except (5) where the product is not that of a concern otherwise assisted by Government, and also except (6) where the industry in question does not receive any other direct aid from Government, Government aid should be accompanied by Government supervision, and also possibly Government control according to the requirements of each case. But the aim should always be to make the concerns ultimately independent of Government control and supervision.

Pioneering of industries should also have the same ultimate object in view. In industries pioneered by Government, the invariable policy should be to associate Indians with necessary Pioneering of industries.

educational qualifications with the work in order that the concerns may be ultimately made over to independent parties. In Japan, perhaps, more than in any other country, industries initially pioneered by Government are now thriving independently of Government control. There are some possibilities for a sugar factory in Assam, where Government owns a sugar-cane farm.

Protection.

I have already said that the Government should guarantee the purchase of the products of Indian concerns for a limited period. Government, in my opinion, should observe strict *Swadeshism*, and whenever articles of a tolerably good quality are available in the country, Government should refuse to go in for foreign products.

But perhaps the most necessary form of State aid is the imposition of protective tariffs. The market of India is now in the grip of Germany, the United States and Japan, no less than of England, and without protection India will not be able to compete with these countries. Unfortunately Britishers have no faith in protection. But free-trade is more or less a necessity with England, inasmuch as, for raw materials she depends mostly on foreign countries. India, on the other hand, is a self-contained country, which produces raw materials, and has also her own market. All she needs is the aid of protective tariffs, in order that her own industries may recover her market from the foreigners.

Technical training and research.

Technical education in India has so far been of a haphazard character, and without any reference to the actualities of the situation. I have known young men who have gone out to foreign countries for technical education, but who, on their return to India, find no one ready to employ them. The policy should be to start industries and then to send out men to receive the particular form of education necessary to carry on any particular industry. I have, in mind, particularly the case of a young man of Sylhet, who having specialised in some branches of mechanical engineering in America, is now editing a newspaper somewhere in North Bengal. Here comes in the necessity for co-operation between the Departments of Education and Industry.

In the present circumstances of this country as regards facilities for technical and scientific education, there must necessarily be a good deal of dependance upon foreign countries for training and research. But the industrial and education Departments by working in harmonious co-operation, should gradually succeed in providing the most up-to-date facilities for scientific and technical training in this country. I don't know what are the possibilities of Assam as a province for higher scientific training, but in my own district, there are no facilities even for the most rudimentary forms of technical education. Technical schools in each district should be established with particular reference to its own needs and possibilities. The Universities should undertake to give higher technical training.

Training of labour.

Labour in India is cheap but inefficient owing to lack of education. Legislation should make primary education free as well as compulsory in the Municipal towns as well as in selected industrial centres, and the scheme of education should be so devised as to give to the men insight into the particular trade or industry in which they may be employed.

Education in schools, besides giving literacy, teaches discipline and gives a tone to the character which makes for general efficiency.

Where, in any industry, technical training of labourers is necessary, the same should be made available to them. There should also be workshops where labourers can be trained as apprentices.

My idea is that every one, from the lowest to the highest, should be trained according to his needs; and for that purpose there should be a net-work of technical schools of the primary, intermediate and higher grades, as well as of workshops, for turning out skilled labourers, overseers, supervisors and engineers of industrial concerns.

Industrial co-operation.

The co-operative movement in this country has hitherto confined itself to agriculture. But the needs of co-operation are even greater in the field of industries for the purpose of production as well as of distribution. Co-operative Societies may, when properly developed, finance the smaller and cottage industries just as industrial banks may finance the larger concerns. They will also be able to supply to the members by way of loans, small machinery, which is capital in another shape. These societies can also be turned to very useful purpose as mediums for the sale of the products. They can sell to members as well as to non-members, and thus bring the buyer and the producer into direct contact to the great advantage of both parties.

Cottage industries.

In the district of Sylhet, the following cottage industries may be handled with advantage:—

(1) Wicker-work.
(2) Handloom-weaving.
(3) Cutlery.
(4) Pottery.
(5) Mat-making.

The weaving industry needs improved looms. The cutlery would be better for small labour-saving machines. All of them suffer from want of capital. Ivory-work was once a thriving industry in Sylhet, but it is now extinct. The industries mentioned above are also in a state of decadence, and unless immediately attended to, will, in all probability, die

out in a few years. At the same time, all they need is encouragement and they can turn out finished articles for the market.

In conclusion, I desire to emphasise the fact that immediate action is necessary on the part of Government for the industrial regeneration of this country. The Indian market having been closed to Germany and Austria-Hungary on account of the war, Japan has been making what has been termed a "peaceful penetration" into our markets. This is just the time for Indian industries to capture the market of the country. The duties of the state in this matter should be conceived in a broader and more liberal spirit than has hitherto been done. *Conclusion.*

Agriculture is no longer sufficient for the population which is daily increasing. Nor is there anything in the argument that because India is an agricultural country she cannot be also a manufacturing country. The case of the United States of America is a complete answer to such a proposition. But America has not become industrially great without the fostering care of the State. India wants the same paternal aid and care, and it requires no prophet to say that India will in no distant time be a great manufacturing country.

ORAL EVIDENCE, 3RD JANUARY 1918.

In reply to the Hon'ble Sir R. N. Mookerjee, the witness stated that he was a pleader by profession and had no practical experience of industries. The whole of his knowledge had been derived from personal observation and from what he had heard from others.

Sir F. H. Stewart.—*Q.* You say the "needs of co-operation are even greater in the field of industries, for the purpose of production as well as of distribution."—*A.* Yes.

Q. Are you referring to Assam, or speaking generally?—*A.* I am referring to Assam.

Q. Do you know anything of the work of the Co-operative Societies in Assam?—*A.* There is only a town bank in Sylhet, confined to the town people, the members who have taken shares. I am a shareholder.

Q. It has been suggested in other parts of India that co-operative societies are not likely to do very well for some time, unless some really well educated men from outside take an interest in their management? Is that your opinion?—*A.* Yes.

Q. Do you interest yourself in the management of the society?—*A.* I have been asked to be a Director, but have had no time to do so, as I was busily engaged in my own profession. I attend their annual meetings.

Hon'ble Sir R. N. Mookerjee.—*Q.* Your interest is to lend them money?—*A.* Yes.

Q. And you want a good dividend?—*A.* Yes. The Co-operative Society cannot help in financing indigenous industries, because that is confined to members only. I can take a loan, being a member; no outsider can take a loan. That is the difficulty.

Sir F. H. Stewart.—*Q.* What interest do you receive for the money you put into the society?—*A.* Generally we get 1-8 per cent.; between 1 and 1-8 per cent.

Hon'ble Sir R. N. Mookerjee.—*Q.* Per month?—*A.* Per share.

Q. What percentage?—*A.* 10 to 15 per annum.

Mr. C. E. Low.—*Q.* In the middle of the first page of your written evidence under the head of 'Capital', you suggest that the subscribed capital should be devoted exclusively to (*i*) financing the indigenous industries of the Province; (*ii*) establishing a model factory equipped with up-to-date modern scientific appliances for the purpose of manufacturing selected raw materials that are yearly exported from this province to other places for manufacture. How many different kinds of raw materials do you propose to manufacture?—*A.* Hides, jute, mustard, rope, timber, raw cotton, coal, limestone, which abound in the Surma Valley.

Q. Would that not be a curious kind of factory?—*A.* I say anyone of them may be selected. I cite instances. Those are the raw materials; anyone may be selected which is most profitable.

Q. This industrial bank would put its money into financing indigenous industries and into this factory: do you think that is a very safe position for a bank to find itself in?—*A.* I think so, if properly taken care of and managed.

Q. You think a bank would be safe with its capital out in the financing of industries and in the factory?—*A.* Yes.

Q. Do you remember what happened in the Punjab?—*A.* The Punjab bank failures were due to many other causes.

Q. Was that not very largely because they put too much of their money into one industry, namely the cotton industry?—*A.* It might be so; therefore I want Government supervision and control, so that it can be properly managed. I would have three departments; one giving loans; another becoming managing agents and financing monthly recurring expenditure; and the third financing the conversion of raw materials into finished products.

Q. In your last paragraph you say, "But America has not become industrially great, without the fostering care of the State." What do you allude to there?—*A.* By fostering care I mean subsidies and bounties. They subsidized various trades and allowed them to compete with foreign markets.

Q. What trades did America subsidize ?—*A.* I cannot cite any particular instance.

Hon'ble Pandit M. M. Malaviya.—*Q.* You have referred to a resolution which you moved at a recent meeting of the Assam Legislative Council. What was the effect of that resolution ?—*A.* It was lost. I pressed for a division and it was lost. All the official and non-official European members voted against it.

Q. When was that ?—*A.* Last October. I have given the date.

Q. Have you got any bank in the capital of Assam, except the branch of the Bank of Bengal ?—*A.* No.

Q. You have no bank except the Bank of Bengal ?—*A.* No, none. I don't know if even the Bank of Bengal has got any branches in Assam. All the tea industries are being financed from Calcutta. They make monthly advances on the hypothecation of crops, and all tea gardens are being managed the same way. The saw mill industry and other industries I know of are also being financed from Calcutta by their Managing Agents, the Allahabad Bank, Finlay Muir & Co., etc.

Q. Are there any Indian banks which do the business of lending money ?—*A.* Simply for the purpose of taking interest, not for financing industries.

Q. Has the co-operative movement made any great progress in your province ?—*A.* Fairly well, but it is confined to members only. That is the difficulty, and it is only for taking loans.

Q. Suppose a bank were started, such as you recommend ? Do you think it will have sufficient business to do there ?—*A.* I think so.

Q. What industries would come to it for help ?—*A.* Many that are now in other hands. These would come into the hands of my countrymen. Take the case of light railways, tramways, limestone, which is practically in the hands of Kilburn & Co., tanneries, jute, mustard, timber. Assam has got very big forests, and timber would be a very profitable business, if it was financed in the country under Government help.

Q. Suppose there was an industrial bank started, which could lend some assistance to these industries, do you think there will be people coming forward to invest their money in it ?—*A.* If it is under Government control ; otherwise people would have no very great faith in joint-stock concerns.

Witness here gave confidential evidence.

Q. So far as cottage industries are concerned, you think that co-operative credit societies would be sufficient to finance them ?—*A.* Yes, because they require small capital. Banks are wanted only for the big industries.

Babu D. C. Chuckerbutty.

Witness No. 392.

Babu Dijesh Chandra Chuckerbutty, M.A., B.L., *Dewan, Gauripur Estate, Assam.*

Written evidence.

I.—Financial aid to Industrial Enterprises.

Q. 1.—Yes, in the case of the proposed Sugar Factory in Tinsukia where the Raja was one of the promoters and Srijut L. Barthakur, the manager.

In case of wealthy zemindars, most are unwilling to join industrial movements and amongst those who are induced to do so, there is a marked tendency to keep aloof from joint-stock companies. They seem to favour industrial enterprises without shareholders or only a very limited number. At the same time it is difficult for them to finance industries properly.

Industrial joint-stock concerns have not yet grown popular ; here high and low look upon these companies with suspicion. This stands in the way of raising sufficient capital to start industries in a first class style without which competition is impossible.

The only possible way seems to be for the promoters to approach Government for expert advice and when the enterprise is approved of by Government, the company could be either (1) floated under Government control and if the share capital is subscribed, Government may withdraw except for such control as may be found necessary, (2) first started by Government along with the promoters and when it is in working order, it can be converted into a joint-stock company and the financial advance made by Government recouped.

Q. 2.—There are certain successful enterprises, such as tea gardens, railways, etc., where the capital is readily subscribed by all who can spare. But for new enterprises it would be difficult to get capital at all from the public and only those few who have studied industrial concerns and are able to finance might invest.

Q. 2*a*.—The safest and most natural source would be the public but unless a number of enterprises have been demonstrated to be successful and profitable, these would not inspire confidence and the public would be shy to invest.

Till such time, I think Government would be the only source from which capital could be expected. For financing new enterprises, I think Government could start a bank or create a fund.

Q. 5.—I would prefer (6) and (7).

Q. 6.—I would leave the management to the nominees of shareholders and directors under Government expert supervision with power to interfere for mismanagement.

Q. 8.—In cases where Government is convinced of a new industry being successful here and where private parties do not come forward, Government should start pioneer industries. If successful, it should be handed over to companies—not to private capitalists. I would not like Government to have permanent Government industries. Primer factories

Q. 10.—I do not see how private banking agencies could give assistance to a joint-stock company unless it is a very successful concern and the advance is considered perfectly safe. Special Government banks with control over the management could help new enterprises.

Q. 11.—I have heard of weaving industries being developed in this way but have no personal experience. Co-operative Societies.

Q. 12.—I have experience of co-operative credit societies and am convinced that as long as the members forming such a society are not much better educated, it is impossible to expect natural development and improvement. They are being educated now in these methods and there must be educated enthusiastic experts directing the affairs of each such industry till such time as the members actually see that they are making much larger profits under the auspices of the co-operative credit societies, when they would willingly join—even without understanding the principles of co-operation.

All such native industries which are dying out for want of funds and proper marketing, *e.g.*, weaving, fish industry, carpentry, etc.

The object of these co-operative credit societies should be to supply capital, obtain raw materials at the cheapest rates, teach improved methods by experts and sell at best advantage thus doing away with the several middlemen's profits.

Q. 12*a*.—Trade guilds might be possible only amongst educated commercial people and I do not think that ordinary trades people would appreciate these at all. It is, however, desirable that the advantage and benefits of trade guilds might be demonstrated to specific groups with a view to popularise them. As long as concerted action does not find favour, guilds cannot do much good. It is, however, time to train up trades people, to realise the benefits from guilds. Government should train people to realise the benefits from guild but I could not tell in what way this would be done best.

Q. 14.—I think there should be no limitations on Government aid, even if a new enterprise competes with external trade. I mean that preference should be given to people of the soil, even if Government have to discourage external trade which is at the hands of foreigners.

II.—Technical aid to Industries.

Q. 16.—I have knowledge of benefits given by Government to agriculture.

There is a carpentry class in Tipkai but I have not inspected it and am not able to give any opinion.

Q. 20.—Yes, paper manufacture, pencil and match factory, cabinet, and furniture making. I note only a few industries which can be fed by raw materials locally. Demonstration Factories.

Q. 21.—The journals issued are no doubt interesting but those of them that could be experimented upon in this province should be taken up by Government and suitable people induced to adopt them.

Q. 22.—I can't say specifically but there are subjects on which researches in the United Kingdom are necessary to be able to develop local resources.

Q. 23.—I would not attempt to answer this without fuller information.

Q. 24.—I can't suggest any particular system having no knowledge but an advisory council of research in India would certainly be of great advantage in giving a definite idea of the possibilities in this country.

Q. 25.—Certainly—specially in Assam where mineral resources and forests are abundant, people do not know in what way these could be developed. Industrial surveys.

I know sometime ago, the zemindars in a body approached Government for assisting them in prospecting the mineral resources in the country. There is only a vague idea as to the localities where such minerals are said to exist, but there is no reliable survey. Government could do nothing to assist them and it is neither always practicable for zemindars to have their estates surveyed by experts without great expense.

Assam is full of forests but for want of enterprise, it is found cheaper and easier to get furniture of daily use from Calcutta. Government now supplies timber sawed in sizes and sleepers to the railway but almost all other forest owners still sell their logs in different lengths to Bengal people who tow them on boats. The public do not know what classes of timber there are in forests and never attempt to explore forests with a view to encourage manufacture in furniture locally. A man who wants to have a wooden bedstead has to buy

a *sal* log, have it sawed, engage carpenters and have one made after a month. Enlightened forest owners ought to take that up themselves but when they do not do so I think Government should come forward to show the way.

III.—Assistance in Marketing Products.

Commercial Museums.

Q. 28.—The one in Calcutta is more or less a show to the public. No attempt is made to train people to benefit by these institutions. But educated people who are interested may benefit.

Q. 29.—They need not be large, but they ought to be accessible and situated in each province and even in more than one in a province according to requirements and different conditions of localities. There ought to be trained men to explain the exhibits with special reference to their possibilities in the country.

Sales agencies.

Q. 30.—I think co-operative credit societies should be started under Government supervision to conduct these sales. This will be a practical way of demonstrating to its members, the advantages of such institutions.

In case of stray unorganised industries, where such co-operative credit societies cannot be formed, Government agents might collect and sell them at best advantage. This might, however, cost Government more than might be justified.

Exhibitions.

Q. 31.—As they are done now, there is unusual activity amongst people for a few days and the only impressions left in the mind of the ordinary public, are products of abnormal and extraordinary growth. The more intelligent classes might profit but then as everything is over in a few days, very little opportunity is afforded to any one unless these exhibitions are followed by practical demonstrations in the interior of villages. If a simple cultivator is induced to make an orchard, or use a new manure or a new crop and is shown that he can make a large profit, much more will have been done by such one example than by issuing leaflets broadcast.

Industrial and agricultural should be separated. The latter with such small industries as might be taken up by people of modest means and education might be added to agricultural exhibitions.

Q. 32.—Yes, but I think large exhibitions in inaccessible places would be more or less a *tamasha*. Small exhibitions in localities from which people might come and attend without difficulty or expenses, followed by demonstrations and practical instructions to the people, seem to me to be the best form. This would apply to agricultural and small industrial exhibitions: big industrial exhibitions should be held in a principal place of the province and educated people invited to attend.

Q. 33.—These exhibitions should aim at showing people what improvements are possible by them to make in the directions of their ordinary pursuits and necessities. The results of intelligent enterprises by their neighbours would be more readily adopted by the people and new ideas about possibilities should be aimed at to be introduced with expert advice and demonstration to induce them to try new experiments.

Q. 36.—Yes, according to the requirements of each province.

Q. 37.—They should be exhibited in commercial museums.

IV.—Other forms of Government aid to Industries.

Government Patronage.

Q. 40.—All I can say that is that raw materials ought to be supplied by Govemment on very favourable terms and real facility afforded encouraging industries.

I could not give an opinion about conditions.

Land policy.

Q. 41.—Generally Government rules have to be relaxed a little to encourage new enterprises and small industries. I could not say of any specific instances but usually a prayer for any such concession against current rules would not be entertained at all.

Q. 42.—I can't give a definite opinion without further information.

V.—Training of Labour and Supervision.

Q. 50.—I should think under the department of industries. I think the Education department should not have any connection with the control of industrial schools—except inspection and suggestions.

Training of supervising and technical staff.

Q. 52.—They should be helped by Government to obtain admission in proper places in the United Kingdom and in deserving cases Government may lend money or assist for such instructions.

Mechanical Engineers.

Q. 54.—I could not say: there should however be a uniformity of standards so that Local Governments should recognise each others' certificates.

VI.—General Official Administration and Organisation.

Q. 56.—I do not know of any special department.

Q. 57.—Yes, there should be a Board of Industries; I could not formulate a scheme without further inquiries and information.

The Board would be of little use at this stage when industrial movement is not at all popular unless there are funds at their disposal.

Q. 60.—This depends upon the constitutions and powers of the Advisory Board. There should be some one to give effect to the advice of the Board and he should be an expert—a practical man.

Q. 62.—I am not for Imperial departments: they would be difficult to reach and such a department would not be able to do justice to the needs of different provinces.

VII.—Organisation of Technical and Scientific Departments of Government.

Q. 63.—I do not know of any special department whose activities are known to the public.

Q. 64.—I am not for any Imperial departments—except for theoretical researches. Imperial Departments.

Q. 71—.I would prefer independent units.

Q. 72.—The investigations in each province should deal only with subjects in which they are interested. They can obtain mutual help and assistance but I would rather have them work independently.

Q. 73.—There should be some sort of control and I fail to see what other control can be possible now at this stage. It should be provincial—with some sort of review by the Government of India on proper representation by aggrieved parties.

Q. 74.—As I said before, in theoretical matters there might be an Imperial Institute.

Q. 77.—By introducing them to proper places and giving them study leave.

Q. 80.—Yes, at first in a small way along with the existing colleges. Gradually they can be improved and separately organised under practical commercial people. Colleges of Commerce.

Q. 81.—This would make men fit to take up industrial matters and direct their attention towards local resources and possibilities.

VIII.—Government Organisation for the Collection and Distribution of Commercial Intelligence.

Q. 82.—The present system as far as is known to me cannot be correct, as the work is practically done by illiterate and uninterested people on Government orders. Government would have to entertain an expensive staff if this is to be correctly compiled. Statistics.

Q. 85.—I have no experience but I don't think journals would be of much assistance or help.

Q. 86 & 87.—There is no harm in publishing or helping to publish trade journals, but I don't think they are of much interest to lay men and even if are read, unless these are followed by demonstrations before people who are directly interested, I don't think they would serve any useful purpose. Trade Journals.

Q. 88.—By Geological surveys, prospecting, etc.

IX.—Other Forms of Government Action and Organisation.

Q. 89—93. I think these would serve, at the present stage, to make industrial activity unpopular. Later on these can be done as found necessary.

Q. 97.—Assam is very poor in communication—specially rail and there are parts of the country which would at once develop if rails were opened. The primitive methods of transport by country boats still obtain here. It is needless to draw attention to this. Communications.

Q. 99.—Yes, several.

Q. 100.—Yes, the mouths of several feeder rivers are being gradually silted up.

Q. 102.—None that I know of. It strikes one that no advantage is taken in Shillong of the waterfalls: but I do not know enough to tell with authority whether it is possible to turn these powers to account.

Q. 105.—I have nothing to say about Government Forest Department except that Government should not look only to the most profitable way of working their forests at the minimum expense but should explore them and make results known to the public as to possibilities. Forest Department.

Besides Government forests, Assam is full of forests owned by zemindars. It is regretted that very little enterprise is shown by owners in improving the working of these forests. I should say that Government should help them by experts and show in what ways improvement could be effected and in cases necessary, help in financing projects.

ORAL EVIDENCE, 3RD JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—Q. You are Dewan of the Gauripur State?—*A.* Yes.

Q. The State does not now interest itself in any industrial work?—*A.* No.

Q. As Dewan you have no concern with industries?—*A.* No; as I have stated in answer to the first question, the Raja helped a young boy to get his education in Japan, and when he returned, the Raja wanted to float a joint-stock company for the sugar industry. We had

some correspondence with Government, but the promoters could not satisfy the Government conditions, and the matter was dropped. Of course the promoters say they did not get sufficient encouragement from Government; but certainly I think that even if Government encouraged it, it would have been difficult to get the necessary capital, because I know the Raja had introduced Mr. Barthakur to all his zemindar friends and they had gone all over the province of Bengal to get funds, but did not get sufficient encouragement.

Q. Have you any particulars as to what help you wanted from Government?—*A.* Only capital. In the first instance we wanted Government to give them agricultural loans, and then to give a lease of some 1,500 acres of land on special cultivation rates. I have got the correspondence with Government with me.

Q. What was the amount of the loan?—*A.* Only ₹10,000, for starting the cultivation—sugarcane cultivation.

Q. You could not raise any capital for that purpose among yourselves?—*A.* The Raja had spent some six or seven thousand, and the other promoters about four or five thousand.

Q. You wanted Government to give you a loan of ₹10,000?—*A.* Yes.

Q. And you thought ₹20,000 would be sufficient to begin with?—*A.* Yes, only for the cultivation of sugarcane at first. It was intended that sugar cane cultivation would be extended, and then the sugar factory started.

Q. What would you have done with the production of the cane cultivation?—*A.* After 2 or 3 years it was expected that if there was sufficient sugarcane cultivated, they would manufacture *gur* and sugar from it.

Mr. C. E. Low.—*Q.* Did you intend, in the first instance, to crush your cane and make it into *gur*, and after a time have a sugar factory here?—*A.* Yes, a sugar factory.

Hon'ble Sir R. N. Mookerjee.—*Q.* Did they refuee the lease of the land and the loan of money?—*A.* They refused the loan of money, and said it was not proper to give it under the Act. Then they laid down certain conditions; the first was that all of the Rs. 2,20,000 must be subscribed before they recommended the lease to the Government of India, because the Government of Assam held that it could not be classed under special cultivation, although the promoters said that it could. The second condition was that they must submit to the labour rules of the tea industries, and they objected to sub-letting; whereas the promoters' idea was that they should parcel out land to cultivators who could grow sugarcane on their own account and sell to factories; but Government would not allow them to sublet.

Q. The Government contention was that you must first raise Rs. 2,20,000 and then they would recommend Government of India to give the lease on special terms and conditions; and that you would not be allowed to sublet?—*A.* Yes, and to submit to the labour rules.

Q. Don't you think that was a very reasonable offer of Government? How would Government know that you would not take the lease and do nothing?—*A.* The difficulty was that no one would subscribe unless they knew that Government had given them the lease of the land.

Q. The Government was willing to do that, provided the company would raise the capital first?—*A.* Personally I don't blame Government, but such is the state of the country that nobody would subscribe.

Q. What has become of the student?—*A.* Later on he was taken into Government service in the Agricultural Department. The Raja tried his best, also some of the other promoters who wanted to start the sugar industry. The difficulty was that unless the people saw that the scheme was backed by Government, they would not pay anything. I have got the correspondence with me, and will leave it with you.

I don't think we require it.

Witness.—The promoters had an idea that they had not been treated well by Government.

Q. I don't think any business firm would have that idea. Supposing others asked Government to lease lands, Government must be satisfied that the company would be able to do it. Anyone might write to Government to give them a concession for 1,000 acres of land. They must show that they are in a position to carry out the undertaking?—*A.* All the most influential men in Assam were connected with it, and they expected that Government would give them special terms and depend upon them. Their idea was that as soon as they could obtain a lease of the land they would at first start cultivation of sugarcane, and then gradually they would convert it into a sugar factory. There was another condition; Government wanted them to have the sugar factory completed in 3 years' time. That was another of the difficulties.

Mr. A. Chatterton.—*Q.* Have you any experience of the silk industry in Assam?—*A.* Not much. In the district in which I work, the ordinary people would perhaps rear some silk worms on mulberry plants, and manufacture silk thread, and weave coarse wrappers for themselves.

Q. Do they grow the mulberry as trees or shrubs?—*A.* Shrubs and trees both; very little, perhaps less than 5 per cent. grow that, and that also for their own use.

Q. They don't sell the products?—*A.* They are not usually able to weave so much as to sell: perhaps they would manufacture one piece of wrapper in the course of 2 seasons during leisure and use it for their own self.

Q. It is a purely domestic industry?—*A.* Yes. In the other districts it is carried on in a businesslike way. I speak about the district of Goalpara. In those places all that I have seen is that they rear some silk worms and manufacture thread from it, and make their own wrappers.

Q. That is to say, it is the revival of a purely domestic industry?—*A.* Yes, in that part of the country.

Mr. C. E. Low.—Q. In reply to question 50 you say you think that technical training should be placed under the Department of Industries, and you think "the Education Department should not have any connection with the control of industrial schools—except inspection and suggestions?"—*A.* Yes.

Q. What are your reasons for making this statement?—*A.* What I mean is that it should be under business men. They should be trained under business men.

Q. Why?—*A.* Because I don't think that the ordinary educational authorities would be suitable men to supervise those institutions efficiently. As educational institutions they can just inspect them to see if everything is being conducted according to rules.

Q. What do you think is the particular difference between industrial and technical education on the one side, and ordinary education on the other, that you prefer to have a special department for it? Would you like to have agricultural education under the Agricultural Department, or under the Education Department?—*A.* If there is a separate organisation under the Education Department I would not object to that; but as it is now, I don't think any good would come of agricultural education theoretically.

Q. In the same way you would like to have industrial education under the Industrial Department?—*A.* Yes.

Q. How does this strike you: the department which is best able to judge of the results of that education and is generally the most concerned with those results should be the department most responsible for it?—*A.* Yes, but they must be practical men.

Q. With reference to your reply to question 82, dealing with statistics, you say, "The present system, as far as is known to me, cannot be correct, as the work is practically done by illiterate and uninterested people on Government orders." Whom are you alluding to?—*A.* The ordinary way it is done is this. We are asked to give figures to Government, the local forecast and area. We ask our tahsildars to supply this, and they depute their ordinary peons to collect the information. These figures are sent to us and we make guess work of it and send them on to Government.

Q. That system only exists in the provinces which used to constitute old Bengal.—*A.* In the permanent settlement areas, the *Gaobura* system does not exist and statistics are collected in the way mentioned.

Hon'ble Pandit M. M. Malaviya.—Q. Do you think if Government were to start a bank, or extend its patronage to it in some form, the public would subscribe to its shares?—*A.* I think they will, but that will perhaps depend upon the interest they get from the bank in the ordinary way.

Mr. A. Chatterton.—Q. They want the dividends before they begin to subscribe?

Hon'ble Pandit M. M. Malaviya.—Q. The assurance of the dividends?—*A.* Yes.

Q. If the connection of Government is in some way established, then they would not insist upon any dividend being guaranteed? Would they?—*A.* Only people interested in the industrial development of the country, but not ordinary people, because even in the villages by ordinary money-lending they would make a larger profit.

Q. You think in the towns the bigger men would subscribe?—Yes, I think they would.

Q. You speak of co-operative credit societies; do you think many of these industries can be organised on a large scale, if you had co-operative credit societies, both for production and sale?—*A.* The experience that I have of co-operative credit societies is rather unfortunate, because I have found that everyone is eager to take money. Simply because it is on a very small rate of interest, they will not pay at all, and we have got to exert our utmost to get our money back.

Q. Are the societies getting increasingly popular?—*A.* In the provinces they are; but in Gauripur, which had the first society in the whole of Assam, I found that after 5 or 6 years, nobody wanted to pay back the money lent to them, and so all the societies have been abolished. We do intend to start new societies under new rules. These were started under the old rules. Simply because the interest is lower than the bazar, nobody wanted to pay back the money, although under the rules they ought to have paid back in 6 months. In those cases they would not pay unless summoned, and threatened with litigation.

Q. Do you ascribe the failure of these societies to the rules being defective?—*A.* Yes.

Q. And you intend to adopt new rules on the model of those prevailing in other provinces?—*A.* Not exactly, but I think with modification, co-operative credit societies ought to be more popular.

Q. And they will supply the nesessary funds, and help in properly marketing the products?—*A.* Yes, they might do that.

Q. Are there no factories at present for cabinet-making or furniture-making?—*A.* None at all on Goalpara side. This is what I think ought to be done at once, because Assam is full of forests, but nobody knows what sorts of timber are grown there.

Q. Is there a school of carpentry started by Government?—*A.* One has been started by the Local Board for training Mech pupils in Tipkai. They do very useful work. I had no opportunity of inspecting it before I came.

Q. But you think there is room for several schools of carpentry?—*A.* I do think so.

Q. Is there any school for hand-loom weaving?—*A.* Pupils are sent to Serampore by the Local Board. Mech women are trained in the Tipkai Local Board School. We try to send one or two every 2nd or 3rd year.

Q. Do these students carry on weaving after they return?—*A.* In Goalpara it is in the hands of the Mechs and Garos. They are trained in improved methods of weaving.

Q. Do you send the women to Serampore?—*A.* No. The men instruct the women

Q. Has much progress been made in this direction since you began to send your students to Serampore: what is the extent of the work?—*A.* Not much; there is one school there only, which has been going on for two years; but something has been done, and a good beginning made.

Q. If a weaving school were started in every town in your province, do you think it would attract a sufficient number of your students?—*A.* How can it, because in the upper provinces the ladies of the household generally weave and are good at embroidery work; they would not probably come out to schools after a certain age unless expert ladies are sent to train them.

Q. In the upper provinces you don't need a school of weaving?—*A.* I have little experience of the upper districts: but I don't think anything useful would be done, because ladies have not sufficient time to devote to these things. They do this only as a sort of recreation. Perhaps they will take 5 or 6 months to manufacture a piece of embroidered work. I don't think that would do much good to ladies of the higher classes. They may be useful to professional weaving classes—if there are any such in the upper districts.

Q. Is there no other organisation for manufacturing furniture in Assam?—*A.* There are some in jails.

Q. Outside jails you say people have to import their bedsteads from Calcutta?—*A.* It is cheaper if they are imported from Calcutta.

Q. Even now?—*A.* Yes.

Q. Why don't non-official people start some of these industries?—*A.* If they do start they will be very successful, but first of all they must know about the woods that are most abundant, and what kinds there are. Nobody knows which kinds can be employed for furniture. I have seen in almost all up-country places, especially in Chota Nagpur, where there is much valuable wood in forests, there are several carpenters and all sorts of furniture are made locally, but in Assam, which is full of forests, you cannot get one article of furniture made.

Q. Do you think if there were bulletins published, giving information as to the kind of timber available, this would encourage the industry?—*A.* Who would read the bulletins? I don't think much good would come out of it, unless a practical demonstration was made and furniture manufactured with local timber and shown to these people. I want small demonstration factories, not big ones at distant centres.

Mr. A. Chatterton.—*Q.* About these people who have been sent to Serampore to learn weaving, how many of them do you actually know anything about?—*A.* I have not got any personal knowledge. I know that one has been sent by our Local Board, and that after coming back he is to instruct the Garo and Mech women. I have not seen them working myself.

Q. Do you know how many have been sent?—*A.* One has been sent.

GAUHATI.

Witness No. 393.

Srijut Prasanna Kumar Baruah.

Srijut Prasanna Kumar Baruah, *Tea Planter and Honorary Magistrate, Nehabari.*

Written evidence.

I.—Financial aid to industrial enterprises.

Capital.

I have no direct experience of the raising of capital for industrial enterprises, except in connection with securing working capital for my tea estate. The conditions under which capital is available for the working of an established tea concern would not be applicable to other industries, nor is it possible to raise capital so easily for starting any new tea estate. For financing going concerns there are Calcutta agents and Marwari bankers in almost all

the districts, who lend money at rates of interest varying from 9 to 12 per cent. and such loans are invariably given on the hypothecation of the year's crop.

I have, however, known some cases of attempts made by small partnership concerns and private individuals to raise money for other industries and the principal difficulty so far as this province is concerned appears to be the fact that the number of Indian capitalists here is strictly limited; of the few who can command some capital, fewer still are willing to invest money in enterprises in which they are not themselves personally engaged as proprietors or large share-holders; as a rule our people have no confidence in the organisers of Joint Stock Companies and they are very loth to invest money in new and untried enterprises.

I do not know of any noteworthy industrial enterprise in the province outside tea. Individuals engaged in shop-keeping or other smaller industries are mainly dependent on Marwari merchants, who charge interest sometimes going up to 24 per cent. per annum.

Q. 4. None excepting in connection with the concession granted to the tea industry in the form of favourable term of land settlement and the loans granted to co-operative credit societiesat the earlier stages. I have no doubt that the rapid expansion of the tea industry in this valley has been principally due to the special encouragement it has received from the State. The co-operative movement which is steadily advancing in this and other provinces of India to the great benefit of our agriculturists and artizans would have been nowhere but for the financial backing up it has received from the Government, and the supervision and control exercised by the administration on the working of the societies have been of incalculable value to them. Government assistance.

In considering the question of Government aid to industries, a distinction has to be made between such industries and trades as are already in existence and those that are new and unfamiliar to the people. As regards the former the Government may undertake to help them by money grants-in-aid, bounties and subsidies to encourage their expansion. The other forms of aid, as are mentioned in Question 5, may also be given to existing industries according to their varying conditions and circumstances. In the case of these existing industries Government has simply to consider the extent of the demand for their products and the adequacy of any security that may be offered in cases in which repayment is insisted upon. It is not impossible to imagine cases where in view of the importance of a particular enterprise, Government may also be asked to encourage its expansion by bounties and subsidies without any provision for repayment. Ordinarily, however, I am decidedly against such gratuitous gifts from the Government. Industries supported by such fictitious aids may not be able to stand the test of competition under normal conditions and may succumb when worked on the ordinary principles of demand and supply.

The case appears to me different with new enterprises unfamiliar to the people and the country. Capitalists require to be coaxed to venture into new fields of activity. Then again there are many trades and industries in which India is far behind other foreign countries and which demand some sort of artificial propping to enable them to stand competition with cheaper foreign product, at least for such a time as may be found necessary to put them in a sound financial position.

Taking specifically the various methods suggested for giving Government aid to existing or new industries, I should say that (1) and (2) should not be generally given to any but well established existing industries or new industries deserving special encouragement. Existing industries such as jute, sugar, cotton, etc., may be granted such aids with provision for return, when in view of the circumstances of any particular time as now, any extraordinary increase of their output is deemed necessary. Loans with or without interest (4) may also be granted in other cases. Guaranteed dividends for a limited period (3) such as are sometimes conceded to railways in India and the provision of a part of the share capital of companies (6) may be found useful in the case of industries requiring considerable capital and specially in new ventures started under the auspices of joint-stock companies. To me it appears that Government aid, as is contemplated under heads (5) and (7) would be found most suitable for both existing and new industries and for both small and large scale productions. They are also suited for private individuals, partnership concerns or joint-stock companies.

It seems to me that Government control would be essential when aids under heads (1) and (2) are granted. Control of the nature as is exercised by the Government, over the operation of the Co-operative Credit Societies by constant inspection and checking of accounts may be found suitable in the majority of cases, specially in the case of individual proprietors and partnership concerns. In the case of joint-stock concerns, I am sure the appointment of Government directors with defined powers for the period during which direct assistance lasts may be found a most effective method of control.

I have no experience of Government pioneer factories and I do not know that there have been any considerable experiments made in this direction. Pioneer factories.

I believe there is ample room for such factories in this Province specially in connection with the production of paper pulp, for which I believe there are ample materials in our vast jungles. One or two factories to deal with the Provincial supply of leather may also be successful.

The general condition of the masses in India can only be improved by the introduction of new and the revival of our old cottage industries. This is perhaps more true of Assam.

If pioneer industries are attempted in this valley, I would like to see the resources of the Government available for this purpose, made use of principally in the development of various modern cottage industries as have proved successful in Japan.

I am of opinion that pioneer factories should be handed over to private enterprise and I should think preferably to joint-stock companies or to partnership concerns, no sooner their commercially profitable stage of development is established. I believe this has been the usual course adopted by the Japanese Government in dealing with their pioneer factories. Evidently there would be no reason to close a factory if it proves a commercial success, and the proper time for making it over to private enterprise would appear to be when it has grown into a sound commercial undertaking. I am of opinion that the Government should on no account seek to retain any successful pioneering experiments in their hands with a view to convert them into permanent Government enterprises.

Co-operative Societies.

I do not personally know of any industries in this province supported by co-operative societies. A few such societies are, however, mentioned in the last report of the Registrar of the Co-operative Societies, Assam. We are told that a co-operative dairy and stores at Sunamganj is going to close. The Kamrup Weaving Societies, however, appear to have proved successful "in as much as the members have almost freed themselves from the rapacious Marwaris." The Registrar further informs us that the Weavers' Society in Sylhet has done admirable work last year. I for one fondly hope that co-operation may one day bring economic salvation not only for our agriculturists but also for the masses at large who in the past made their living by handicrafts of sorts. In this valley weaving has been a traditional occupation of the womenfolk in all classes of society from the highest to the lowest and though there is a caste known as the "Katanies" specially associated with the work of weaving, in pre-British days, all families used to make their requirements of clothing materials by themselves.

It is doubtful whether with the cheap products of European and Indian mills overflooding the market, there is any hope of reviving handloom weaving with cotton yarns. In Bengal they have partly succeeded in the matter of the handloom industry by the production of "dhoties" and "saries" with cotton and other mixed yarns, but the conditions are entirely different here. As regards our silk however the indigenous *eri*, *muga*, *pat*, and *mazankari*, of the valley, I have every reason to believe that, though declining under the stress of various circumstances, not the least of them being competition with cheaper silk from other parts of India and from foreign countries, the industries in these are capable of vast development and may even prove to be the mainstay of the masses of our people next to agriculture.

Eri and *muga* seem to have also vast possibilities of securing a market outside the province, as they have been found to be specially durable and to have caught the fancy of the Europeans. I think it is the bounden duty of the Government to do something to foster and develop this famishing, if not dying, industry and it is worth noticing here that at the Industrial Conference, held at Jorhat in the year 1915, under the presidency of the Commissioner, Assam Valley District, a pledge was given by him on behalf of the Government, that a weaving school would be started at Gauhati without delay, though nothing seems to have been done since to redeem the pledge.

I may as well say once for all that I believe co-operative organisations among artizans as distinguished from agriculturists should be founded wherever practicable on the basis of communal and craft interests. In Assam as in other parts of Hindu India, special crafts and callings are traditionally associated with special castes and each one of these castes or guild societies may be made the centre of one or more co-operative organisation in every sub-division or district.

Referring, in conclusion, to the general question of Government aid to industries, I have to submit, that so far as this valley is concerned, it is through co-operative banks and other co-operative organisations for production and sale that the people can be best helped and as I have already said all such aid must take the form of encouraging the expansion of the co-operative movement. Cottage industries supported by credit from co-operative organisations which will at once supply capital and materials and arranging for securing a market for the produce, are the primary requirements of the situation, so far as the vast masses of the people are concerned.

Limitations to Government aid.

I do not think it would be at all expedient for the Government to enter into competition with private enterprise in any field where private enterprise has any chance.

This question involves the discussion of principles of international trade in regard to which the policy of the Government of India is not yet settled and may undergo serious change after the war. But, on the whole, I am disposed to agree with those who like to see India self-contained in her economic resources and I do not see why there should be any limitation on Government aid to a new enterprise in India, because it happens to compete with an established external trade.

II.—Technical aid to Industries.

Industrial Surveys.

I should certainly think that the existing knowledge of the economic resources of the country specially with regard to the mineral resources requires much to be supplemented by further surveys. We know we have got iron and mica mines in different parts of the country, and we also know that gold dust used to be sifted from the waters of some of the rivers of

the upper valley, but the commercial side of these resources is not yet known with sufficient accuracy to induce capitalists to invest money for the exploitation of these resources of wealth. I think if a body of prospectors be formed to report on these resources, it would be the duty of the Government to throw the informations broadcast so as to invite capitalists to try these fields.

III.—Assistance in marketing products.

I have no personal experience of commercial museums, but I think, institutions like these are very desirable in a country like ours, where the people could hardly avail themselves of opportunities to go abroad and see things for themselves. These museums should be the repository of all sorts of manufactured products, as well as of raw materials, both foreign and Indian, and as such should serve the purpose of a central mart like the exchange, where people might come to dispose of the products of their individual cottage industries and where they should also get the raw materials of their respective industries. In my opinion at least one museum of this kind should be established in every large town with agencies in every sub-division for buying and selling finished products and raw materials respectively. These institutions should be entirely under Government control, and should be formed on the basis of the co-operative system as far as practicable. In places where co-operative credit is at discount, local banks should be asked by the Government, for the purpose of financing these institutions; I have no direct experience of such institutions, but I think in order to infuse life and impetus to the already atrophied indigenous cottage industries of the people a workable scheme on the lines sketched above forthwith demands the serious attention of the Government. Commercial Museums and Sale Agencies.

I don't think exhibitions are much useful in their way, far less to those for whom they are mainly intended. They serve no other purpose but a pleasant rendezvous, during their continuance, for all people great and small, and are like fleeting phantoms of delight, without leaving any solid gain for the people. I consider the disbursements on such displays as mere waste of the public exchequer which the people hardly realise that they have had to pay for. Exhibitions.

In my opinion Government as far as possible should not import all such articles that are produced in India, provided the standard of quality of the articles is in no way inferior to those imported. A list of such articles and the models of the articles themselves, would no doubt have a fitting place in a commercial museum. Government patronage.

As I have hinted above, the commercial museum should be financed by co-operative credit societies or by approved banks and these societies or banks through the museums and their agencies should issue loans on easy terms on good securities. The main difficulties with those who rear cottage industries seem to me to be in the way of marketing the products and banking facilities. If such productive and distributive houses, as I have outlined above, are established, where the people might get ready value for their products, and thus securing for themselves the profits of the middleman, and where also they could get loans on easy terms, as well as the supply of the raw materials, without the least fear of being imposed, I think the old renowned industries of Assam would have a happy resurrection and in no time an all-round improvement in the economic condition of the people would be the inevitable result. Banking facilities.

Official administrations and organisation.

I am so far not aware of the existence of any provincial organisation in our province for the development of industries, but I should certainly think that this is a desideratum that needs immediate attention in a country like ours where there are immense industrial possibilities. Considering the abundance of land available in our country and the proclivities of the people, the bulk of which are mainly agriculturists, along with their present economic condition, I should think that granting of facilities for the improvement and expansion of agricultural industries mainly, should have the larger share of attention from the Government; but to accomplish this object, the land policy of the Government, should be recast so that small capitalists also may get lands under terms of concession. Official organisation.

In order to educate the people in useful agricultural industries I should think there should be a Board of Industries consisting of experts, both in manufacturing and agricultural industries, with two or three popular leaders of the people having industrial experience. Demonstration farms, at least one of which should be established in every district, should be under the control and guidance of this Board. In my opinion it should be not only advisory but it should have executive powers with budgetted funds. The functionaries of the Board should be itinerant and they should always be in close touch with the people, giving them not only expert advice but also demonstrating to them the benefits of improved methods of culture. The demonstrations should be made in one or two individual holdings in every village throughout the province.

If a Board consisting of three experts, say in agriculture, sericulture and another in some one of the manufacturing industries of which there is a possibility in this country, and two non-experts having industrial experience, be constituted, I don't think a Director of Industries would be of much service, but a high official with such a designation might be appointed to preside over the deliberations of the Board and to supervise its works.

I should think the Board of Industries should have a free hand in matters of research, experiments and publication of the results thereof, with budgetted funds. The Director of Industries acting only as a Secretary to the Board and having a seat in the Local Legislative Council with a portfolio. The provincial Governments as the supreme authority should determine the spheres of activities of the Board and initiate such undertakings whenever possible on the recommendations of the Board.

Imperial Department.

I should certainly recommend that an Imperial Department under a single head should be formed and the head be included into the Executive Council of the Viceroy with a portfolio as there are the Law Member and the Member for Education. There should also be an Imperial recurring grant, earmarked only for industrial undertakings and distributed amongst such provincial undertakings that cannot be maintained solely by provincial finances.

I think an Imperial Department under a single head as suggested above would best suit the purpose of correlating the separate activities of the various provinces but in order to familiarise the people with the net results of the various undertakings and activities, both individual, Joint-stock or Government aided, there should be a periodical publication directly under the Imperial Department, under some such designation as The Imperial Industrial Gazette. The Government provincial gazettes also should devote a few pages for the industrial intelligence of the various countries.

Land Policy.

As mentioned above Government give concessions of land only to those who apply for it for special cultivation. In our country the tea industry practically covers the term special cultivation, and as such is the only recipient of land concessions, although cotton, jute, etc., coming under this head, though feasible of cultivation in our country are hitherto neglected. I should think Government should not depart from the policy hitherto followed with regard to the special cultivation, at the same time it behoves them not to forget the claims of the hitherto neglected industries of our country, to wit *eri* and *muga*, which have an immense industrial future if they only decide to back them up by granting small holdings to the people under the special cultivation terms.

It seems to me that the 30 years' rule has been working very satisfactorily with the tea concern, and I should certainly recommend to continue this rule till such a time as the available wastes of Assam are fully reclaimed, of course due reservations being made for the convenience of the *ryots*.

In this connection I cannot help remarking that the 30 years' rule, although it has been greatly beneficial to the tea industry, is not totally devoid of its accompanying evils from the *ryot's* points of view on account of too liberal a policy adopted by the Government in the past. In the majority of cases of tea companies floated in England, vast acres of land, as many as 3 to 4 thousand acres, have been settled under this rule with each individual company, although perhaps not more than one-third of the area has been brought under cultivation during the last 30 years. The consequence is ruin and disaster to many of the neighbouring villages and disappointment to many rising capitalists seeking investments in the tea industry. I therefore recommend that, in future for all land grants, Government should compel the recipients to enter into an undertaking defining the period during which they should bring the land under cultivation and in the event of failure of compliance the concessions should be withdrawn.

Publications.

I should certainly recommend that bulletins containing useful informations about improved methods of culture and results accruing therefrom should be published from time to time in the simple language of the country, by the Board above referred to.

General.

As mentioned above I am actively concerned with the tea industry. This industry, although it holds an enviable position at present, will have, I am afraid, to weather many storms in the near future. Assam is a country where local labour and capital are very scarce. The mainstay of the tea industry is the immigrant labour from other parts of India; since the abolition of the *arkatti* system of recruiting, the planters have to depend for the supply of their labour force only on *sirdari* recruiting, which is in my opinion as slow in its operation as it is incapable of fully meeting the demand. I consider that for the benefit of an industry as the tea, which has absorbed millions of British capital and which is responsible for the maintenance of nearly four lakhs of people, and which has served as a lever lift to the economic condition of the country, the recruiting laws should be so adapted as to admit of a more free immigration from other parts of India.

As regards the concessions hitherto granted to the industry in connection with the land, I should certainly urge the Government to continue the same policy towards all *bonâ fide* capitalists, large or small, seeking investment in the industry.

Transport.

Assam is a country full of natural resources, but owing to deficient communication and lack of the principal sinews of industrial enterprises, I mean labour and capital, those resources have been left to blush unseen and waste where they grow. I know Assam can supply raw materials to feed two paper mills, but where is the capital and expert labour to launch such an undertaking? I think paper pulp in Assam is a good case for investigation and I should urge the Local Government to requisition some experts in order to investigate thoroughly into the question and publish the opinion of the experts in course of time so as to attract capitalists, in the event of the experts encouraging such an undertaking.

ORAL EVIDENCE, 5TH JANUARY, 1918.

Mr. C. E. Low.—*Q.* What is the extent of your interests in the tea industry?—*A.* I have 415 acres under cultivation, and about 100 acres more, without cultivation.

Q. That is your own personal property?—*A.* Yes.

Q. Did you obtain this as a grant from Government, or was it your own land to start with?—*A.* It was hereditary property.

Q. How did you come to start planting tea?—I did not start it myself; my father started it; it is now nearly of 40 years' standing.

Q. Do you know what induced your father to start tea?—*A.* At the time when my father started the concern, people generally took to tea and there was the tea boom at that time.

Q. Were they local landowners—Assamese landowners?—*A.* Yes.

Q. Are local men still taking up tea?—*A.* Yes, but they cannot get land nowadays.

Q. Is the kind of land suitable for tea limited in extent?—*A.* There is an abundance of land suitable for tea in all parts of the country.

Q. Then why cannot they get it?—*A.* The first difficulty is that at the time when the smaller capitalists applied for land, there was always interference from Government, and the Government not being satisfied with their financial condition would not give the land. Secondly, when they did get land, big companies always came along and bid higher for the land and so the smaller people could not get it.

Q. Are lands put up to auction?—*A.* Yes. I myself applied on several occasions for land, but could not get it, because the bigger companies would come down and bid for it. It goes to the highest bidder.

Q. Is there no reservation made in favour of Assamese?—*A.* No, that is the only difficulty.

Q. What are the terms on which Government give out land for what you describe as special cultivation?—*A.* On a 30 years' lease.

Q. And on what annual rent or revenue?—*A.* 12 annas per bigha for 30 years.

Q. Is it the same from the beginning?—*A.* Yes.

Q. Is it not less to start with?—No.

Q. Do they pay any premium?—*A.* At first when we apply for land we have to pay for the survey, and all the initial expenses; also the forest valuation.

Q. I thought you said they were put up to auction?—*A.* In this way; for instance, I am an applicant. When I complete my arrangements, somebody else comes and bids for the land, after I have gone to all the expense and trouble.

Q. And do you actually pay the premium for it?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—You first apply and Government arranges to give you the land, you have the survey made, and after you have spent money, then the auction takes place?—*A.* Yes. We have just applied for land, and I hear that the Rajghur Tea Company is going to bid for that land. This sort of thing actually happened in the case of the Amraoti Company who applied for 6,000 acres of land. The land was put up for auction and Rs. 14,000 was paid by the Company when it was closed with them.

Q. That was not after somebody had spent money on the survey?—*A.* Yes.

Q. Was it compensated for?—*A.* Yes, they are generally paid the survey fees, but not all the expenses: just to cover survey expenses.

Q. You say, "I have no doubt that the rapid expansion of the tea industry in this valley has been principally due to the special encouragement it has received from the State." Do you allude to the fact that Government, or rather the East India Company, made a number of experiments and showed that tea could be grown; or do you mean the terms on which land is given?—*A.* The terms on which land is given.

Q. Are those terms more favourable than those for land for ordinary cultivation?—*A.* Yes, they are favourable if the land is granted.

Q. More favourable than for ordinary cultivation, say, for rice?—*A.* Yes.

Q. Do you know anything about sugar-growing?—*A.* I have no direct experience.

Q. You say in your second paragraph, "I have, however, known some cases of attempts made by small partnership concerns and private individuals to raise money for other industries, and the principal difficulty, so far as this province is concerned, appears to be in the fact that the number of Indian capitalists here is strictly limited."—*A.* Yes, they could not raise sufficient funds, so they collapsed.

Q. Have there been any serious failures here? What is your experience of joint-stock concerns?—*A.* I myself was one of the originators of a joint-stock concern. It was not registered. It was a tea concern. We took up lands but could not raise sufficient funds and could not start.

Q. Have there been any cases of bad or scandalous failures which have alarmed people?—*A.* No.

Q. You say there are mica mines in different parts of the country. Do you know if those have been examined by the Geological Survey Department?—*A.* I don't know exactly, but I hear there are mica mines just on the North-East Frontier.

Q. Do you know whereabouts these are?—*A.* Beyond Sadiya.

Q. You say, "If a Board consisting of three experts, say in agriculture, sericulture and another, in some one of the manufacturing industries of which there is a possibility in this country, and two non-experts having industrial experience, be constituted, I don't think a Director of Industries would be of much service, but a high official with such a designation might be appointed to preside over the deliberations of the Board and to supervise its works." Do you think a Board like that could look after the staff of the department, tell them where to go, what work to do, look through their diaries and see that they do it, and arrange for their promotion, reward or punishment?—*A.* I think so, because the Board of Industries, if constituted, might hold different parts of the province.

Q. You want the staff to do that, and you think this Board could manage the staff itself. Is it the case of joint-stock companies that the directors do all these things jointly, or by permanent managing agents or managing directors?—*A.* Generally it is the managing directors who manage joint-stock companies.

Q. Do you think that a Government Board would be able to exercise the same sort of administrative functions as a Board of Directors?—*A.* I think a Board of Directors would be far more suitable, because if they take 2 or 3 non-officials into their directorate, they would welcome the idea.

Q. I am not criticising the suggestion of a Board; I am only asking you whether a Board would be able to do the ordinary administrative work of the department.—*A.* I think they would. Of course there should be budgetted funds for all the initiative undertakings.

Q. You say, with reference to these recruiting laws, "I consider that for the benefit of an industry such as the tea, which has absorbed millions of British capital, and which is responsible for the maintenance of nearly four lakhs of people, and which has served as a lever lift to the economic condition of the country, the recruiting laws should be so adapted as to admit of a more free immigration from other parts of India." What exactly do you recommend: do you want the *arkatti* system introduced again?—*A.* I have not been able to suggest anything. In the Legislative Council there was an Enticement Bill which was not passed into law. Some sort of thing is necessary for tea planters, because they have no hold on the coolies.

Q. Is Act XIII of 1859 resorted to much here?—*A.* Yes.

Q. But what you want is more free immigration. A restriction on people here would not necessarily help in bringing in more coolies; restriction like the Enticement Bill would not necessarily bring in more coolies; in fact it would be more likely to diminish them. How do you suggest you should get in more coolies?—*A.* Not exactly the *arkatti* system, but free immigration of those who want to come here, by sending more sirdars into the recruiting districts.

Q. There is nothing in the Act to prevent your doing that?—*A.* Any slight infringement of the present law causes them to be brought to trial.

Q. Have there not been very grave scandals in the provinces from which recruiting has been carried on?—*A.* Yes, I know that.

Q. Do you think it would be safe to make a relaxation in view of that?—*A.* I don't exactly say that there should be a relaxation. The whole *arkatti* system should be revised but I have not been able to suggest anything.

Q. In some parts of India they get a good deal of seasonal labour in for tea cultivation, and I think that has been the case to a limited extent in Assam?—*A.* Do you mean short-term coolies?

Q. You want people who do some of their work in certain seasons, and who have 5 or 6 months with nothing particular to do. They might come in at certain times?—*A.* We generally get coolies like that from the recruiting districts.

Q. I have heard two objections made to that proposal: one is that railway fares are too high in some cases, and the other is that some employers have given these people advances, and take advantage of Act XIII of 1859 to prevent them going away again?—*A.* Not to my knowledge. I have not heard anything of that sort. They generally come and go back again.

Q. What is the cost of bringing in short-term coolies?—*A.* The railway fare, plus some Rs. 20 to 30 in advances.

Q. If you got a regular inflow of seasonal labour, they would not want advances?—*A.* They want advances at home themselves.

Q. How much do you say the cost is?—*A.* Rs. 60 to 70 a head.

Q. How much is the railway fare?—*A.* I don't get my coolies by rail but by steamer. I think it is Rs. 6-8 from Ranchi, single fare.

Mr. A. Chatterton.—*Q.* Have you any practical experience of other industries than tea?—*A.* I have not.

Q. What is the average size of Indian owned tea estates?—*A.* At present the smallest area is 50 to 60 acres; but they are generally expanding every year.

Q. Have you any cultivation of tea by *ryots*, on a scale of from 5 to 10 acres?—*A.* On the Dibrugarh side they do that for selling seeds. They are seed-bearing trees.

Q. What do these smaller planters, who have areas of 50 acres, do with their crops? Do they pluck the tea and sell it to neighbouring factories?—*A.* No, they undertake the old processes of manufacturing tea by means of ovens, not machine made; by drying in big iron pans and rolling it by hand and sell it to local market.

Q. Does that tea fetch as good a price as machine-made teas?—*A.* Machine-made is far better.

Q. Are there any factories for making tea independent of estates?—*A.* None.

Q. Do any of the estates buy tea from planters?—*A.* If a small ryot happens to be in the neighbourhood of a big garden, and if he has no machinery, he sells it to a neighbouring planter.

Q. You recommend that one or two factories should be started to deal with the provincial supply of leather; what makes you suggest that?—*A.* Our people have not taken to leather. Hindus have a prejudice against doing business in leather. I know lots of leather is exported from Assam, and nobody has taken that business seriously.

Q. Are there no tanneries at all in Assam?—*A.* No.

Q. Where do you get all your leather from?—*A.* We have no shoe factories here; we import it all from Bengal.

Q. Then you say, "The Kamrup Weaving Societies, however, appear to have proved successful." Have you any personal knowledge of these?—*A.* I have not, but I saw this from the Registrar's report.

Q. I suppose the same applies to your remarks about paper mills; this is merely information you have gathered; you have made no enquiries yourself?—*A.* No, but one of our Assamese students is in the Titaghur Paper Mills.

Q. You have no personal experience of commercial museums but you would like to see them started and made into depôts for the sale of products?—*A.* Yes. The chief difficulty about our cottage industries is in regard to marketing their products, and it has always been interfered with by middlemen. They cannot get proper value for their products, so I think if Government took the initiative in these things, they will be saved from the middleman, and will get proper value for their products.

Q. Are there any agents of the Bombay Swadeshi Stores here; do they come up here and buy the products of cottage industries?—*A.* Very seldom.

Q. What you really want is not a museum but a depôt?—*A.* Yes, but at the same time there should be a museum, where improved methods of spinning and weaving and all these new appliances should be kept in view, so as to give a study in them to the people.

Q. You want your museum to be a depôt and a demonstration factory?—*A.* Yes.

Q. In the last page of your evidence you say that in consequence of land being given in large areas to tea companies, "ruin and disaster" are brought about "to many of the neighbouring villages and disappointment to many rising capitalists seeking investments in the tea industry." Can you give us any examples of that?—*A.* Most of the villagers cannot get sufficient land for grazing purposes; besides they are always oppressed whenever their cattle encroach into the gardens. The cattle are always impounded, and the poor *ryots* have to pay fines for their cattle.

Q. Who settles these impounding fees?—*A.* There are pounds settled by Government in every garden.

Hon'ble Sir R. N. Mookerjee.—This does not always refer to European concerns, but also to Indian concerns?—*A.* Yes, but there are very few Indian concerns

Q. But still they have the same rules?—*A.* Yes, but Indian planters have not got such large areas as the Europeans.

Mr. A. Chatterton.—You think this business of impounding cattle brings ruin to ryots?—*A.* Yes at the same time these *ryots* for want of grazing lands and oppression leave their villages and go to distant places.

Q. You mean to say that the *ryot* gives up his land and goes away because the tea companies start in the neighbourhood. *A.* Yes, there are cases like that.

Sir F. H. Stewart.—*Q.* Do you manage your own garden?—*A.* I have got my own man and visit it often.

Q. Do you mind telling us how you are financed?—*A.* I have got local bankers and finance it through them.

Q. What are the banking facilities here: are there any large banks or branches of banks?—*A.* There are no regular banks; generally there is one European firm, called the Planters' Stores, who generally finance these tea gardens on Calcutta drafts.

Q. They only finance gardens for which they are agents?—*A.* Yes. Some planters have got Marwari bankers.

Q. How do you dispose of your teas?—*A* I send my tea to Calcutta agents and they sell through brokers at public auctions. Balmer Lawrie & Co. are my agents.

Q. You say that when Government aid is given to industries, "a distinction has to be made between such industries and trades as are already in existence, and those that are new and unfamiliar to the people." And then you go on to say, "In the case of joint-stock concerns, I am sure the appointment of Government directors, with defined powers for the period during which assistance lasts, may be found a most effective method of control." Do you mean powers beyond those of other directors, more than those of other directors?—*A.* I don't understand.

Q. It has been suggested sometimes that the Government Director may require to have the power of *veto,* or something of that sort. Do you contemplate that, or would you give him the same powers as the rest of the Board?—*A.* The same powers as the rest of the Board. The Director should serve as Secretary, but he should sit in the Legislative Council with a portfolio.

Q. That is the Director of Industries; but you are speaking of Government directors here, where Government help is given to private concerns. You would not give them more powers than other directors?—*A.* No.

Q. You say that pioneer factories should be made over to commercial enterprise when they have been established on a sound commercial basis. How would you arrange for these factories to be carried on: should Government go at the start to a responsible firm and say, "would you undertake the management of this"?—*A.* Yes.

Q. And that firm presumably would have the first chance of taking it over afterwards?—*A.* Yes.

Q. With reference to your proposed Board of Industries, you say that the Director of Industries should be Secretary to the Board, and should have a seat in the Local Legislative Council. You would make him practically a Secretary to Government?—*A.* Yes.

Q. You say, "Secretary to the Board": would that mean he would only be a sort of executive officer of the Board and a mouthpiece of the Board?—*A.* Yes, and he should sit on the Legislative Council with no powers of *veto.*

Q. Supposing there was a difference of opinion between the Director of Industries and the other members of the Board?—*A.* The Director should have no vote at all. The vote of the Board should be final.

Hon'ble Sir R. N. Mookerjee.—Why should he be in the Legislative Council; what good would it do him?—*A.* There the non-official members might have a voice in the undertakings of the Board.

Q. The Legislative Council don't decide any executive questions?—*A* No, not up to now.

Sir F. H. Stewart.—What is the 30 years' rule?—*A.* It refers to the period in which land granted by Government is to be brought under cultivation.

Hon'ble Lieut.-Col. P. R. T. Gurdon.—*Q.* I gather from your reply to Mr. Low that there had been some disinclination on the part of Government to grant land for tea to the Assamese?—*A.* I didn't say "disinclination."

Q. Perhaps I misunderstood you?—*A.* Generally there are obstacles raised when they apply for lands. When they do get it and the survey has been made, some big companies come in and say "I will bid for this plot of land," and the applicant loses the land, as they cannot cope with these big companies.

Q. Are you aware that official orders were issued by the Chief Commissioner that preference was to be given to Assamese with regard to land applications for tea?—*A.* That has been done very recently. Even then this rule is in force that whoever can bid for land will get it.

Q. It is the auction system you are objecting to?—*A.* Yes. If that is not removed there is not the least possibility of the Assamese getting any land whatever. I have my own experience in this matter. At the present moment I have applied for 400 acres of land, which I have had surveyed. The Rajghur Tea Company has written to the Deputy Commissioner to allow them to bid for the land.

Q. Is it not a fact that there is a rule, under the Assam Land and Revenue Regulations, that, after the application has been made, the land is advertised for sale on a certain date and on that date others who have applied for the land before the notice of sale, can come and bid? That rule has been in force for a good many years; it is no new thing?—*A.* We strongly object to it, as there is not the least possibility of our getting land. If the Rajghur Tea Company come and bid for that land, I have no chance. It is a very big company with big capital.

Hon'ble Sir R. N. Mookerjee.—Then your idea is that once Government give permission to survey land, there should be no more auctions. The Government should make up its mind beforehand?—*A.* Yes.

Hon'ble Lieut.-Col. P. R. T. Gurdon.—In your answer to Mr. Chatterton about a depôt, I understand you mean a sort of emporium?—*A.* That is what I mean.

Q. Where there should be different manufactures of rural industries to be exhibited for sale?—*A.* Yes.

Q. Where would you place that depôt?—*A.* I should like to put it in a head-quarters town.

Q. And whom would you place in charge of it; would it be a Government depôt, or run by a company?—*A.* It should at first be aided by Government, otherwise people won't take to it; and afterwards, if it can be run on a co-operative basis, so much the better. Government should start it like a pioneer industry.

Q. In your answer to Mr. Chatterton you spoke about the oppression of *ryots*, owing to the opening of tea gardens. Oppression by whom? Is it oppression by the tea planters?—*A.* Not direct oppression.

Q. Who do you mean—oppression by Government?—*A.* By the planters.

Q. In what way?—*A.* Such as the impounding of cattle and by not allowing the village people to pass through their gardens.

Q. Closing the right of way?—*A.* Yes. I know of a case in the Dibrugarh district; a part of the village practically has removed, owing to the neighbouring gardens.

Q. Is it not the fact that in large areas, waste lands are being thrown open for grazing, under the orders of the Assam Administration?—*A.* Yes.

Q. Are larger areas required then?—*A.* It should be at very frequent intervals. Now they are at very long intervals.

Q. Hon'ble Sir R. N. Mookerjee.—Do you mean by "intervals" that they are too far away from each other?—*A.* Yes.

Q. Hon'ble Lieut.-Col. P. R. T. Gurdon.—Then these grazing areas have not been properly located?—*A.* We want more grazing grounds and in proper places.

Q. If more grazing grounds were made, would that meet your objection to the *ryots* being forced to leave their ancestral lands?—*A.* That is not the only grievance; there are other things besides. My garden, for instance, is in front of a village, and I have often to close the garden and not allow a thoroughfare. The people are oppressed in that way; in the rainy season they cannot come out.

Q. You cannot have tea and rice cultivation as well? To begin with, the same area, which would be suitable for tea, would not be suitable for rice?—*A.* No, tea is generally grown on high land, and rice on low land.

Q. What you mean is that you require more areas for grazing grounds?—*A.* Yes.

Q. Mr. A. Chatterton.—Does the opening of tea gardens confer any benefit on the local people in the way of providing a market for local produce, and employing labour? Does the price of local labour rise on account of imported demand?—*A.* The Assamese people who grow their paddy grow only sufficient for their own consumption and don't sell to the neighbouring gardens. The gardens get their own supply of rice from the big markets.

Q. I want to know how these Assamese cultivators pay their rent if they don't sell their own produce?—*A.* Very seldom they sell their own produce. They have to depend upon the money-lenders for the payment of the revenue.

Q. Hon'ble Lieut.-Col. P. R. T. Gurdon.—Don't they sell things like vegetables and ducks and fowls to tea planters?—*A.* With regard to vegetables, it is generally the up-country people who take up land on the river side and grow all the vegetables that are sold in the local markets.

Q. And in some part of the country don't they sell some *dhan*?—*A.* Yes, they do sell.

Q. Under the heading of "Pioneer factories" you say, "The general condition of the masses in India can only be improved by the introduction of new, and the revival of our old cottage industries." What do you mean by old cottage industries?—*A.* I mean *eri*, *muga*, *pat* and *mazankuri* silk weaving, etc.

Q. How do you think that the silk industry can best be improved: what is your idea?—*A.* My idea is, save the people from the middleman, such as the Marwari. The best facilities should be given for the marketing of their products, not only the yarn but also the finished products. Besides there should be concessions given for land, say small holdings of 40 to 50 acres for growing those trees that are generally required for purposes of silk rearing. That is the only thing necessary; that is why I have suggested there should be emporia where they should be able to dispose of their goods directly, without the help of the middleman.

Q. Are there any other industries which you refer to; any other old cottage industries besides silk?—*A.* Yes, lots. In our country every caste is associated with some sort of profession, weavers, brittiyals, who make gold ornaments. There are some people who make *dharis*, and *pattias*. These are cottage industries.

Q. Would you include basket-making, cane work, and that sort of thing; mat-making?—*A.* Yes.

Q. You know what *sitalpati* is—the manufacture of a very fine kind of mat?—*A.* Yes. all those sorts of things.

Q. You doubt whether there is any hope of reviving hand-loom weaving with cotton varns. What do you think about silk; do you think there is no hope of improving the hand-loom for weaving silk?—*A.* Why not; that is why improved appliances should be sent.

Q. How would you best improve the loom; what is wanted in the present loom?—*A.* I hear that the Salvation Army have brought out a new loom. Some sort of thing should be suggested to these people by means of demonstrations.

Q. Would it be a good thing to supply weavers with the reed? There are some complaints from Upper Assam that *ras* is not procurable at reasonable prices. Would it be a good thing to establish a depôt for the supply of *ras* to weavers?—*A.* Yes, all sorts of appliances.

Q. I understand you want land to be given out on favourable terms to silk-worm cultivators; land on which the food crop of the worms is grown?—*A.* Yes.

Q. Such as lands growing *eri, kesaru,* etc.?—*A.* Yes.

Q. You talk about the 30 years' lease rules, which are for special cultivation. Would it satisfy you, say, if lands were given out for a revenue free term for a certain number of years, and then gradually brought up to the full assessment afterwards?—*A.* In that case it would.

Q. Are you aware that the 30 years' lease rules are being gradually withdrawn from Assam?—*A.* Yes, but I don't approve of that.

Q. Then you say that the *eri* and *muga* have vast possibilities. What would you propose to do to favour the trade in *eri* and *muga*; how would you proceed: would you have trade agents?—*A.* Yes, that is why I propose that emporia should be started in every headquarters.

Q. In Assam you mean?—*A.* Yes.

Q. But you want places outside Assam?—*A.* No, that should be started by Government. Government should purchase the finished products from the emporia and serve as distributing houses.

Q. In regard to the marketing of *eri* and *muga* you say that "at the Industrial Conference held at Jorhat in the year 1915, under the Presidency of the Commissioner, Assam Valley District, a pledge was given by him, on behalf of the Government, that a weaving school would be started at Gauhati without delay, though nothing seems to have been done to redeem the pledge." Where was that pledge given? I have a copy of the report of the proceedings of the meeting, but it does not contain particulars of the pledge. What is your authority for that statement?—*A.* I understood it to be a pledge; at least in the way the speech was delivered we thought some sort of thing would be done.

Q. But the word "pledge" is used here.—*A.* Perhaps I have over-rated it.

Q. Under the heading of land policy you say, "I therefore recommend that in future for all land grants Government should compel the recipients to enter into an undertaking defining the period during which they should bring the land under cultivation, and in the event of failure of compliance, the concessions should be withdrawn." You want to have a clearance clause, I understand, in the lease?—*A.* Yes.

Q. That, within a certain time, a certain area should be opened out for tea, and that, if the area is not so opened out, you should have the lease cancelled or withdrawn?—*A.* The lease should be converted into the ordinary periodical lease, and there should be some penalty.

Q. Hon'ble Sir R. N. Mookerjee.—If a man takes a thousand acres and only cultivates 200 acres, your idea is that the 800 acres should be made over to Government?—*A.* No; but the time should be defined under which the recipient should bring the land under cultivation. If he fails the lease should be converted into a periodical lease.

Q. And a fresh lease given to anyone else?—*A.* Not to anyone else. It would save speculators in one way, and those who take vast acres of land. We don't want speculators in our industry.

Q. What penalty would you impose, and how should one proceed to act?—*A.* In the case of a thousand acres, the man must undertake to cultivate 200 acres in 5 years, and after another 5 years another 200 acres, and so on. If he fails, the whole area should be converted into a periodical lease, the ordinary lease.

Q. He would still be in possession of the land, but only pay more revenue?—*A.* Yes.

Q. Mr. A. Chatterton.—About these cottage industries in Assam, are there hereditary village artisans in the village?—*A.* Very few.

Q. How do these artisans get pay: is payment in kind still prevalent in the province?—*A.* In some parts of the country it is.

Q. Hon'ble Sir R. N. Mookerjee—You are not particularly fond of limiting the giving of land to Assamese by preference?—*A.* No.

Q. You say, "I should certainly urge the Government to continue the same policy towards all *bonâ fide* capitalists, large or small, seeking investment in the industry."—*A.* By smaller capitalists I mean the Assamese.

Q. The large capitalists mean the Europeans, or any Calcutta firm: you don't mind that?—*A.* I don't mind that so long as our interests are maintained.

Q. Then you object to the rule that preference should be given to Assamese?—*A.* No, I mean by smaller capitalists the Assamese.

Q. But if two big companies come, one being Assamese?—*A.* I would decide by priority of application. The auction system should be abolished. If I apply for land first it should be settled with me direct.

Q. You say, "I should certainly urge the Government to continue the same policy." What same policy?—*A.* The same policy as regards special cultivation terms.

Q. But when outside people come in, a *bonâ fide* capitalist, you have no objection?—*A.* I have no objection. When there are so many thousand acres in Assam, let them take it.

Q. Then the Government circular is not right; it is restricted to Assamese?—*A.* It is not restricted. The Assamese would not get the benefit of it so long as the auction system exists. Even that rule would not help the Assamese in any way.

Witness No. 394.

Srijut Prabadh Chandra Bardalai

Srijut Prabadh Chandra Bardalai, *Assistant to the Registrar, Co-operative Societies, Assam.*

Written evidence.

So far as the Brahmaputra valley is concerned, of which I am in charge of the co-operative societies, there is no industry worth mentioning which has been directly fostered by formation of co-operative societies. Last year a co-operative society was formed with the sole object of fostering the weaving industry in an advanced village by supplying yarns at cheaper rates than at the bazar. It is still in an experimental stage. The results so far achieved are satisfactory. Indirectly some industries such as weaving, silk-rearing, jewellery-making, etc., have been assisted though to a small extent by purely credit societies by issuing loans to their individual members wherever there were applications for the purpose. Co-operative Societies.

Besides the one purely supplying society mentioned above, the means applied were that in some credit societies their bye-laws have been so amended as to make provision for issuing loans to their members for purchase of weaving materials, etc., instead of allowing them to go to the money-lenders who generally charge a very high rate of interest on their advances and make a condition of selling the finished products to themselves at a cheap rate.

The results obtained in these types of societies are beneficial inasmuch as they have saved the members from the grasp of the money-lenders to some extent. But from the point of view of the development of the industry, they are not much, as the members would have the same amount of finished products without such societies. The reason is that in Assam there are only a few families of professional weavers but the bulk of the population are cultivators. Their womenfolk do the work of weaving in their leisure hours. They are not willing at this stage to give up cultivation for weaving although the latter may hold out promise of more gain. In the Surma Valley of this province, there is an inspector in charge of the Co-operative Societies. Some cash societies have been formed there with the sole object of financing professional weavers where there are, I understand, too many of them. The Inspector, who, I believe, has been called upon to give evidence will be able to furnish more information on this subject.

In my opinion co-operative societies should be encouraged for the following industries :—Weaving, silk-rearing, bell-metal and brass industry, carpentry, dairy and cattle-breeding, jewellery-making, etc.

Organisation.—Co-operative societies for purchase, production or distribution as found suitable should be formed amongst professional men in suitable localities with limited or unlimited liability. There should be a central Bank with the sole object of financing such societies.

Special objects.—The special objects of these societies should be to revive the dying indigenous industries and to foster the existing ones.

In this connection I beg to refer to page 7, paragraph 8 of Sir E. Maclagan Committee's Report which runs as follows :— "The forms of co-operative activity that have proved most popular and successful in England are those connected with purchase, production and distribution. But in most continental countries these branches of work were not undertaken until credit societies had been firmly established, and development in India has followed the continental precedent. The first Act (X of 1904) provided for the formation only and postponed to them all forms of non-credit co-operation. The policy was deliberately adopted, not because the vital importance of the other kinds of co-operation was not fully realised, but because it was held that among a relatively backward population the difficulties involved in the management of productive and distributive businesses were likely to prove a stumbling-block in the way of progress. Credit societies with their simple organisation and methods of management afforded the easiest field in which the principles of co-operation could be learnt and practised and were therefore first pressed forward. With the numerical increase in

societies a knowledge of the main principles underlying co-operative work has gradually spread among the people and in areas where these have been best understood, a desire has arisen for applying them to other branches of business besides the lending and borrowing of money. We wish to make it clear that in our opinion this development is not only inevitable but essential to the balanced development of the economic condition of the country as a whole, and that the demand for non-credit forms of co-operation is in itself a healthy sign. We would insist, however, on two conditions which appear to us vital to success. Firstly, it is essential that the demand for such societies should arise not merely from external suggestion or hope of effecting some small economy, but from the existence of a real need and from a real comprehension on the part of their originators of all that is implied in the term "co-operation;" and secondly, it is scarcely less important that a strong and competent staff should be available for the supervision of such societies and for dealing with the complicated economic problems involved. Where these conditions are satisfied, we welcome the formation of societies for other purposes than credit."

Assam has learnt to some extent the principles and the benefits of co-operative credit but practically nothing has been taught regarding co-operation in industrial development. So long the grounds were being prepared as quoted above. I think the time for sowing the seeds of industrial co-operation in suitable areas has come. With the appointment of a Director of Industries with a suitable staff, which is in contemplation of the Local Government, a new phase of activity will arise on co-operative lines which undoubtedly will prove a blessing to the people.

At present the Commissioner of Excise is also the Registrar of Co-operative Societies and he holds charge of some other departments in addition.

ORAL EVIDENCE, 5TH JANUARY 1918.

Sir F. H. Stewart.—*Q.* Who is the Registrar of Co-operative Societies in this Province?—*A.* Mr. Mackenzie is the Registrar of Co-operative Societies; besides he is also Commissioner of Excise, and he holds charge of some other Departments in addition such as Salt and Registration.

Q. How many Assistants are there under the Registrar of Co-operative Societies for co-operative societies work?—*A.* There are two, one for this Valley and another for the Surma Valley.

Q. How long have you been in this Department?—*A.* I have been serving as Assistant to the Registrar for the last ten years.

Q. Is that ever since the appointment was created?—*A.* No, there was another man before me for some time.

Q. How many co-operative societies are there in your district?—*A.* In my area there are about two hundred societies in all.

Q. What kind of societies are they? Are they for industries or for agriculture?—*A.* They are mostly for agriculture.

Q. Have you any co-operative societies for weaving or any other industry?—*A.* I have put down in my statement that there is only one purely weaving society for supplying weaving materials to the people, and there are four others which issue loans for weaving purposes as well as for agricultural purposes; they are mixed societies.

Q. Do you take any active part in the formation of co-operative societies?—*A.* Yes, the formation and supervision of these co-operative societies are my duties.

Q. Do you manage or supervise them at all after you have formed them, apart from your duties as Assistant Registrar?—*A.* Yes.

Q. Are they progressing well in this province?—*A.* Yes, they are progressing.

Q. Are the members able to manage their affairs satisfactorily?—*A.* In most cases they do.

Mr. A. Chatterton.—*Q.* This weaving society which you mentioned to Sir Francis Stewart, is it in Kamrup?—*A.* It is just near this station on the other side of the river.

Q. How many members belong to it?—*A.* It had 20 members on the 31st March last. The number must have increased by this time.

Q. Have you any information regarding the extent of their transactions?—*A.* It was just started. The capital at the time of starting consisted of Rs. 515.

Q. Are the members who belong to this weaving society all caste weavers?—*A.* No. As I have put down in my written statement, there are only a few families, some at Titabor and some at Sualkuchi who are professional weavers; but generally in Assam the women in every household weave.

Q. But in this particular weaving society who are the members?—*A.* The members are the husbands and brothers.

Q. I want to get at the exact constitution of the society; you have 20 members or more: are these men or women?—*A.* Men.

Q. Are these members themselves weavers?—*A.* They are not weavers; they take materials for their womenfolk.

Q. So it is rather an amateur society?—*A.* Yes.

Q. It is not a real professional weavers' society?—*A.* No.

Q. And these men carry on totally different occupations, they are agriculturists I suppose?—*A.* Some are agriculturists and some Government servants.

Q. It is a sort of association for supplying weaving materials?—*A.* Yes.

Q. Are those members of the society educated people? *A.* Yes.

Q. So it is not a genuine example of a co-operative weaving society?—*A.* There is no such society in this Valley.

Q. You have been associated with this movement for the last ten years: I suppose you have come across a good many instances in villages where there are a number of silk growers?—*A.* Yes.

Q. Is there any co-operation among them in any way?—*A.* No, not that I know of.

Q. Is there any man growing *muga* silk or *tussar* silk who takes an independent lease of land from the Forest Department on which to grow his silk, or does the village, as a whole, work co-operatively, or what?—*A.* They grow trees on their lands and rear silk there.

Q. Do any of these silk rearers take up plots of land from the Forest Department and grow silk in the forests?—*A.* I have not come across such a case.

Q. Do they not say that they want help from Government in the way of improved terms for leasing out trees in the forests for silk worm cultivation?—*A.* I do not think they do. I have no experience of them.

Q. You have not enough information on that point?—*A.* No.

Mr. C. E. Low.—*Q.* Does that society which you were talking about to Mr. Chatterton for supplying weaving meterials sell the goods which the members make and help them in that way?—*A.* It is only a distributing society. It purchases things cheap and retails them to the members at cheap rates.

Q. It does not attempt the distribution of their manufactures?—*A.* No.

Hon'ble Lieutenant-Colonel P. R. T. Gurdon.—*Q.* Regarding this co-operative society which you mentioned to Mr. Chatterton for the supply of yarn to the members at cheaper rates would you suggest any other things besides weaving materials?—*A.* They supply yarn.

Q. Would you include *ras* *?—*A.* Yes.

Q. Is there any difficulty in obtaining *ras*?—*A. Ras* is very difficult to get.

Q. Where do they get *ras* from now?—*A.* Here they get from Pattidarang.

Q. Has the price of *ras* gone up of late years?—*A.* I have no exact information on that point.

Q. Is it the fact that the people of Assam obtain their *ras* for weaving from Lower Assam?—*A.* I think they do.

Q. You don't know that for certain?—*A.* I do not know.

Q. Then as regards the bell-metal industry, have you any experience of the bell-metal industry in Sathibari or in Karimganj?—*A.* I have seen lots of things from those places.

Q. Have you any idea as regards the improvement of the industry?—*A.* By giving expert advice.

Q. Would it be any good to send some men to other parts of India to learn improved methods?—*A.* Yes.

Q. Would you recommend that?—*A.* Yes.

Q. Say to Jaipur or some other places like that?—*A.* Yes.

Q. How could it best be arranged, by the giving of scholarships or how?—*A.* By giving scholarships and stipends.

Q. Then as regards carpentry and boat building, is there any difficulty in obtaining the necessary timber for the manufacture of furniture or for making boats in the province?—*A.* No, I do not see any difficulty. At least so far as I know, there is no difficulty in procuring wood, but the people do not know how to make them, that is the difficulty.

Q. Is wood readily available from the Forest Department for furniture and boat building, or are there any restrictions in the way of getting wood?—*A.* Royalty has to be paid.

Q. Do you think that the royalty is too high or do you think it is too low?—*A.* I do not think it is too high.

Q. You would not give any special facilities for getting timber cheap?—*A.* I would not give any special facilities.

*Note.—The ra(n)s is the reed of the loom.

WITNESS NO. 395.

SRIJUT DEVESWAR GOSWAMI, *Managing Proprietor, Barpathar Farm, Golaghat.*

WRITTEN EVIDENCE.

The Sugarcane Industry.

I have a sugarcane farm at Barpathar in the Rangamati mouza of the Golaghat sub-division in the district of Sibsagar and I am the Managing Proprietor of the above farm. Sugar is manufactured in my farm by the *Hadi* process. In my humble opinion the following measures should be adopted to improve the industry of sugar and *gur* (molasses) manufacture in the province of Assam.

(1) Cultivation of sugarcane being an annual affair, it has to be renewed from year to year. Sugarcane requires much manure without which it cannot thrive well. The expense of manufacturing sugar by machinery is also very considerable. It will, therefore, be a great help if it be regarded as a "special cultivation" and certain concessions be granted in respect of land by the Government with a view to improve the industry

(2) In my opinion grants of 30 years leases should be made to intending adventurers and the lessees should be given sufficient time and opportunity to reclaim and cultivate the land. The grant should not be liable to cancellation even if the lessee failed to cultivate the whole of it within a short period of time. In case a time limit is considered essential it should never be less than ten years for the cultivation of the whole grant and five years for half the same.

(3) In case 30 years' grants be not practicable, revenue may be assessed at half the current rate upon intending sugar-manufacturers. This will mean no loss to the Government, because at present the sugarcane cultivators give up their land after every four or five years. Petty manufactures may also be exempted from the timber valuation, which is not assessed on rayats cultivating less than 50 bighas of land.

(4) Our province is not suitable for the establishment of a big central sugar factory owing to want of sugarcane at one and the same place in a sufficient quantity. Such a factory would be of no use to Assamese villagers as they cannot leave their homes (where they have got *rúpit* land for paddy cultivation) to work in the factory or to supply sugarcane there. The neighbourhood of the rural country where sugarcane could have been cultivated easily is more or less covered by tea plantation. So a central factory will be of no use either to the villagers or to the middle class gentry who cannot start a sugar factory owing to want of funds.

(5) The districts of Lakhimpur and Sibsagar are more suitable for sugarcane cultivation; and within this area sugarcane is one of the principal cultivations of the rayats. Establishment of an experimental farm in one of the districts will benefit the local industries. The method, followed in the Nawabganj farm at Bareilly in the United Provinces of Agra and Oudh, as devised by Mr. W. Hulme, the Government sugar engineer, should be adopted in the experimental farm; and if established at all, it should be in either of the districts of Upper Assam where sugarcane is plenty and grown easily. The smallest sugar plant that could be worked on a commercial basis (as proposed by Mr. W. Hulme), should be adopted for use in the experimental farm.

(6) Manual labour should as far as possible be replaced by improved imported machines worked by cattle. Land suitable for sugarcane cultivation and manure as well should be selected by experiment and the varieties of foreign sugarcane which are suitable for this country ought only to be cultivated. This should be done under the supervision of the Agricultural Department.

Pioneer factories.

(7) Government pioneer factories should be established and worked by purchasing raw materials (sugarcane) from private enterprisers and rayats. These factories, equipped with proper machinery, may be handed over to private capitalists after 4 or 5 years.

(8) In a rich country like the United Provinces small machinery has been needed, devised, and worked well. In Assam too which is but a poor province, big machinery will be out of question.

(9) If the pioneer factory works well in one district others may be started in each district of Assam and handed over after some years to private capitalists which will encourage existing private enterprises in the province.

Government assistance.

(10) Last of all duty should be imposed on foreign sugar and Assam should be given opportunity to manufacture country sugar and *gur* (molasses) for local use. In short it should be the look-out of the benign Government to encourage the industry in all possible ways and as best as it can.

ORAL EVIDENCE, 5TH JANUARY 1915

Hon'ble Sir R. N. Mookerjee.—Q. With reference to these conditions that you put forward, I want to know whether you have applied to Government stating these conditions or anybody else has done so, or what you state is your opinion?—*A* I did not apply myself for land on special cultivation rates but I know one gentleman who went to Japan and returned

here and he applied for land and he was not given that on special cultivation terms. His name is Mr. L. Barthakur.

Q. Can you produce any of the letters of the Government before us on that subject?—*A.* I have not got any letter.

Q. Are you quite sure about what you tell us because we may have to make references to Government on the subject?—*A.* I know that is certain. Moreover that gentleman is coming as a witness.

Mr. A. Chatterton.—*Q.* What is the area of the sugarcane farm you are working?—*A.* 60 acres.

Q. Do you rotate sugarcane with any other crop?—*A.* Only sugarcane. I allow the land to lie fallow every three years and then I take up other plots. The crop is all very well for the first two years but for the third year it is not good.

Q. Do you grow a rattoon crop?—*A.* Yes. In the third year I cut up the roots.

Q. Do you manure sugarcane fields?—*A.* Yes. While opening a new land or forest land I do not use any manure but afterwards I use cow dung and mustard cake.

Q. How much money do you spend on manure for each acre?—*A.* Rs. 30 per acre if I use oil cake manure and Rs. 8 per acre for cow dung manure.

Q. Can you tell us what weight of cane you get per acre for the first crop?—*A.* 900 maunds per acre. That is the best crop.

Q. On the second or rattoon crop how much do you get?—*A.* About the same. Generally we do not wait for a third crop.

Q. What is your average crop?—*A.* The average may be about 600 maunds.

Q. How do you crush the cane when it is ripe?—*A.* We have a three-roller mill driven by steam.

Q. You say that you use the *Hadi* process. From a maund of juice how much of sugar do you get?—*A.* I get about one maund of *rab* from seven maunds of juice and 16 seers of white sugar from one maund of *rab*.

Hon'ble Sir R. N. Mookerjee.—*Q.* From seven maunds of cane juice you get 16 seers of white sugar?—*A.* Yes. One seer is lost in drying and it comes to 15 seers per maund of *rab*.

Q. How long have you been carrying on this business?—*A.* For 26 years.

Q. Are you extending your business?—*A.* I extended it from a small beginning but for the last few years I have not extended it.

Q. Why?—*A.* Because there is no other available land for sugarcane.

Q. Is it Government land that you have?—*A.* It is *patta* land, that is, land assessed to full rate of revenue.

Q. What is the assessment?—*A.* Rs. 1-9-6 per acre.

Mr. A. Chatterton.—Q. Do you sell any *rab*?—*A.* I do not sell it as *rab* but as *gur*.

Q. What do you get for a maund of *gur*?—*A.* The present price is R6-8-0 or R7.

Q. Do you sell white sugar?—*A.* Yes, previously I used to sell it for R9 to R12 but now it is sold at R15 a maund.

Hon'ble Sir R. N. Mookerjee.—*Q.* You are making a good profit then?—*A.* 35 per cent. profit on the capital.

Mr. A. Chatterton.—*Q.* What do you do with the molasses?—*A.* That is sold in the market for mixing with tobacco for hookah.

Q. Is there a large demand for the molasses?—*A.* I can sell all my molasses.

Q. What price do you get for it?—*A.* R2-4-0 a maund.

Q. Do you buy any cane from other people?—*A.* No.

Q. When do you plant sugarcane here?—*A.* March and April.

Q. When do you cut it?—It begins from the 15th December and ends about the month of March.

Q. Do you keep your engine and mill running the whole of that time from the beginning of December till the end of March?—*A.* Sometimes it is closed. I find difficulty in getting the machinery repaired when there is need of repair. I have sometimes to send parts to the railway workshops for repair.

Q. What is the size of your mill? What is the length of the rollers and the diameter?—*A.* 14 inches diameter and 24 inches length.

Hon'ble Sir R. N. Mookerjee—*Q.* What made you take up this industry?—*A.* I belonged to a respectable family but I was poor and I took up service in a tea garden and after that I took to experimenting in sugar and took up sugarcane cultivation.

Mr. A. Chatterton.—*Q.* What sort of steam engine have you got? Is it a portable steam engine or a fixed one?—*A.* Fixed, with a separate boiler. It is not an oil engine but a steam engine.

Q. What is its horse power?—*A.* The boiler 10 h.p. and 8 h.p. the steam engine.

Q. Who is the maker of the engine?—*A.* The boiler is from Messrs. Ransome Sims and Jeffreys, Limited, and the engine from Messrs. Manlove Elliot and Company, Nottingham, England. For preparing sugar I have got a separate plant.

Q. How much capital have you sunk (in the concern)?—*A.* The annual expenditure is about R12,000, that is, the running expenses.

Q. What is the capital expenditure on the whole of this plant?—*A.* I have kept no accounts for that. The machinery cost about R13,000 but I cannot give you an idea of the cost of acquiring and opening up the land.

Q. Do you burn wood or coal?—*A.* Firewood.

Q. What do you pay for firewood?—*A.* I have got my own forest, but I have to cut the trees and the cost of carriage comes to six annas per cartload.

Q. When you are working your mill how many hours a day do you work?—*A.* About 12 hours daily.

Q. During the whole season?—*A.* Usually for twelve hours but sometimes when the sugarcane supply is small then of course it is closed earlier.

Q. What do you boil down the juice in?—*A.* Open fire-heating pans.

Q. How much more land could you cultivate and work up with this plant?—*A.* Another 60 acres.

Q. Do you want artificial irrigation at any time for your sugarcane?—*A.* Not necessary. It may be good but I have not tried it.

Q. There is no real necessity for it?—*A.* No.

Q. Is there rain in this part of the country in March when you plant your cane?—*A.* Yes.

Q. Is your cane thick or thin? What is the diameter or size of the cane that you grow?—*A.* Two inches in diameter.

Q. Where do you get your cuttings from?—*A.* I once got from the Jorhat Government farm some striped Mauritius cuttings and cuttings of 2 other Barbados varieties. I use also local varieties called *bogapura* and others.

Q. Are you troubled by jackals?—*A.* I am not troubled to any great extent.

Q. Who drives this plant for you? Have you got an engineer?—*A.* I have got some local men who have been trained.

Q. Where did they get their training?—*A.* It is not very difficult. I was trained myself and I have also a man who received some training in the Jorhat workshop. I got no training in any workshop.

Q. What pay do you give to the driver of this plant?—*A.* R12.

Q. Do you keep him all the year round or do you keep him only for a few months in the year?—*A.* I keep him for the season.

Q. What does the man do during other times?—*A.* He is employed by me on other things as sirdar, and I pay him less for that period.

Q. Have you got any steam plant or mechanical plant of any kind on your farm?—*A.* Nothing except the sugar plant.

Q. Do you plant sugarcane in trenches?—*A.* Yes.

Hon'ble Lt.-Colonel P. R. T. Gurdon.—Q. You plant striped Mauritius and other kinds of cane. Which gives the best outturn?—*A.* Striped Mauritius and *bogapura* yield about the same outturn, but *bogapura* is liable to disease while the other is not.

Q. Have you any difficulty in obtaining striped Mauritius from the Government farm or do you get it easily?—*A.* No. I got them free of cost.

Q. You say there is not much demand for molasses locally. Why do you not sell it to the Jorhat distillery?—*A.* I have supplied *gur* to that distillery but after that I have not supplied them nor have they asked for it.

Q. Why is that?—*A.* On account of the difficulty of communications.

Q. What price are they prepared to give for molasses?—*A.* They took *gur* at R5 a maund.

Q. But no molasses?—*A.* No.

Q. You say you employ local labour?—*A.* Yes, local as well as foreign. I employ *ex*-garden coolies who live in villages as rayats.

Q. Who are your engineers and mechanics?—*A.* They are local men.

Q. They are Bengalis?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.* What pay do you give them?—*A.* R12 and R8.

Hon'ble Lt.-Colonel P. R. T. Gurdon.—Q. Have you received any application from any Assamese for employment?—*A.* I employ local Assamese when the rice cultivation season is over.

Q. Could you employ any apprentices? Would you agree to employ any apprentices if they got stipends?—*A.* I have no objection.

Hon'ble Sir R. N. Mookerjee.—*Q.* Is your adjoining land suitable for extending cultivation?—*A.* There is no fit land around for cultivation. There is no available land and besides it is difficult to obtain land on account of the opposition of some of the tea planters.

Hon'ble Lt.-Colonel P. R. T. Gurdon.—*Q.* What sort of opposition?—*A.* I myself applied for 1,200 acres in three applications in all at a remote place in order that the planters might not interfere. But one year after my application a part of the land had been already occupied by some planters.

Hon'ble Sir R. N. Mookerjee.—*Q.* After twelve months from the date of your application that land was given to somebody else?—*A.* It has not been given, but it has been occupied, that is, it has been surrounded by cutting lines of survey and the planter applied for a grant there. I personally requested the planter not to interfere saying that the Government had already promised to encourage me but he did not listen to it and although there are more than 500 acres of waste land available near by, the planter has surrounded a part of the land of my application.

Q. How did he occupy?—*A.* By filing an application and opening a Nursery.

Q. But the Government knew that you had applied for that land for sugarcane cultivation?—*A.* I applied for tea cultivation.

Q. I am talking of sugarcane and is there any land for which you applied but did not get?—*A.* No.

Q. Why are not others following your example? You are making a good profit?—*A.* About 6 or 7 persons have taken up sugarcane cultivation only on a small scale.

Q. The land which you applied for, for tea cultivation, is that land suitable for sugarcane cultivation?—*A.* Yes.

Q. Why did you not extend your sugarcane cultivation instead of going in for tea if you had such a good profit?—*A.* Because tea can be grown as a permanent cultivation whereas sugarcane has to be done every year.

Q. You think that tea industry is more profitable than sugar cane?—*A.* In my opinion tea is more profitable because it is permanent and can be sold afterwards whereas a sugarcane plot cannot fetch the same price if sold afterwards.

Mr. A. Chatterton.—*Q.* How many coolies do you employ on this sugarcane farm?—*A.* 120 agreement coolies and besides in the cultivation season I get other labour, that is about 20 or 30 over and above these 120 permanent coolies.

Hon'ble Sir R. N. Mookerjee.—*Q.* Do you know of any other instance from your own personal knowledge where any Assamese applied for tea land and was not given?—*A.* One is Srinath Bez-Barua of Golaghat, another is Guruncharan Barbora's son, and the third is the wife of the headmaster of the High School at Golaghat.

Q. Who decides the cases? The Deputy Commissioner?—*A.* I cannot say.

Q. In your own case did you prefer any appeal to the Commissioner?—*A.* My application has not yet been finally disposed of.

Q. But you say that the land has been already occupied. Why did you not appeal to the Commissioner?—*A.* The planter applied in December last only, and I am waiting to see the decision of the authorities.

WITNESS No. 396. *Rai Sahib Aghor Nath Adhikari.*

RAI SAHIB AGHOR NATH ADHIKARI, F.R.A.I. (London), *Superintendent, Normal School, Silchar.*

WRITTEN EVIDENCE.

Financial aid to Industrial Enterprises.

1. My first experience in raising capital was in connection with the Spinning and Weaving Mill of Rangpur. It was about the year 1890. It was, I believe, the first attempt of its kind on a larger scale in this part of India to raise capital by small shares of Rs. 10 each. Though I did not take any active part in it; I saw several of my friends contributing their shares with much enthusiasm. But with the collapse of the company owing to mismanagement and misuse of funds, people were much disappointed. About the year 1895, I tried in conjunction with the late Mr. Amiritalal Roy, the organiser of the Bengal Provincial Railway Company, to raise capital on the same line for the said railway. I experienced much difficulty. The disaster, the mismanagement and the frauds of the past, frightened the contributors. However capital was raised. A friend remarked "we must not lose heart if one or two such enterprises fail. This must be our object-lesson for the future—we have to learn business at our own cost." Again the sudden growth of the so-called insurance companies promising Rs. 100 for each Rs. 10 subscribed, especially in this part of India, and their sudden disappearance during the last three or four years have increased the shyness of capital a good deal. But for enterprises in which our men have given proof of their business capacity, people are still ready to subscribe shares. The tea industry is a business in which Raising of Capital.

we have not failed, for the managers of our tea-gardens are men who get their training in tea-estates managed by European companies. My late experience in raising capital is in connection with the All-India Tea Company of Sylhet. There was less difficulty in raising the capital for this company.

Capital can still be raised easily by public subscriptions in the form of shares for joint-stock companies, if the promoters can satisfy the public by giving sufficient guarantee for the following arrangements in the management of their concerns :—

(1) *Appointment of Directors.*—If the directors' list does mostly contain the names of a good number of business men and not of Rai Bahadurs and Raja Bahadurs or M.A., B.L.'s and M.A., D.L.'s. The Tata Company collected funds very easily, for people had much confidence in their business capacity.

(2) *The selection of the Managing Director.*—There seems to be a very common belief that any educated man can become a successful business manager. Lawyers are no doubt of the acutest intellect, but it does not follow that any lawyer can successfully manage any business. The Manager of the Rangpur Spinning and Weaving Mill was a pleader. Again the promoters of a company sometimes usurp to themselves the actual managing of the company.

(3) *Supply of labour.*—We often make a wrong estimate on this head of expenditure. Labour is not so cheap in India as we may be disposed to think. The wages may be low but the people are not honest, dutiful, punctual and hard-working—so the amount of work done is much less compared with the wages paid.

(4) *Supply of raw material.*—The supply of cotton and yarn has this year much retarded the working of the cotton mills. It is to a great extent attributable to the war, but such disasters the managers must always be prepared to face.

(5) *Machines and tools for the concern.*—Machines of new design are not always successful. Advertisements sometimes mislead purchasers. Trained mechanics are not engaged. I had one experience of it at Pabna (North Bengal). A surkee-mill went out of order and the work was stopped for a week. A friend of mine, who was a Mechanical Engineer, came to see me from Calcutta. He was requested to examine the machine. He put it right in about half an hour. He had some parts opened by the workmen of the mill. He then removed a piece of wood which accidentally entered the exit hole of the boiler. He charged Rs. 50. For this small business the mill suffered a loss of at least Rs. 500 for want of a little mechanical skill.

(6) *Appointment of trained labourers.*—Sufficient numbers of trained labourers are not appointed and no attempt is made to get unskilled labour trained for the work.

(7) *Suitable sites.*—Unsuitable sites often become a source of unnecessary cost and trouble. Cost of transport absorbs a good deal of the dividend.

(8) *Utilization of bye-products.*—Good arrangements are not made for the utilization of bye-products, consequently the dividend is poor.

(9) *Supply of additional capital.*—For various reasons the estimated or the paid-up capital may fall short of the requirements. Managers in such cases are compelled to borrow money at a high rate of interest which absorbs all the dividend. Guarantee is not given for the supply of this additional capital at a nominal interest.

(10) *Audit of accounts.*—Arrangement is not made to have accounts examined by certificated auditors appointed by Government.

2. Capital for the bigger industrial enterprises is principally drawn from willing contributors in the form of small shares. This is the way in which joint-stock companies raise capital. Mostly those who follow literary professions subscribe their shares to joint-stock companies. The shop-keepers prefer banking business. But most of the people prefer putting their money into land. This gives them at once a *locus standi*; they can work the land themselves; and in any case know how to do so through others. If the credit of the Government or of well-known and trusted men were behind the floatation, confidence would be inspired and the shares more readily taken up. It is, I believe, a fact that companies floated by Europeans are readily subscribed to by Indians but they fight shy of sinking money in purely indigenous companies, unless the promoters are well-known and inspire confidence. If the Government by itself or by granting subsidies to well-known business firms, would project industrial concerns in the various provinces as illustrative of what might be done and done *profitably*, then the local people would soon take it up for themselves.

3. I do not know of any company in this province where more concerns have been started than could be maintained in full time employment.

Government assistance.

The Assam-Bengal Railway Company would never open lines had it not been aided by Government. Government aid in such enterprise is necessary. The Gauhati-Shillong Motor service would never have been run by private firms apart from Government guarantee and aid. It is now run by Messrs. Kilburn & Co. and very profitably according to the last general meeting of share-holders. This practical illustration has had its effect on private firms in Shillong who are now running their own cars to bring up goods and if Government did not preclude them from passenger traffic they would easily and very soon cut out Kilburn's. I would suggest that Government should guarantee and subsidise at least the first firm undertaking original enterprise within the province. If this were successful, it would

be unnecessary afterwards. But in co-operative business Government aid in money should not be given. Co-operation cannot be generated by endowments. Self-reliance and independent effort are the two main pillars of genuine co-operation.

Forms of Government aid.

(1) Money grants-in-aid should not be given to joint-stock companies where business is to be carried on solely for the profit of the share-holders. But in the initial stage of some co-operation or central banking business, Government aid may be necessary. Money grants-in-aid may be given in cases like the following :—

(*i*) Scholarship to students for receiving technical education in other countries.

(*ii*) Grant-in-aid for such inventions as are likely to be of industrial advantage.

(*iii*) Opening exhibitions.

(*iv*) Publishing instructions for the improvement of any industry.

(*v*) Arrangement for demonstrations and lectures.

(*vi*) Establishment of a Department of Industry with laboratory and museum under a qualified staff where the intending directors of any industrial concern may get practical help.

(*vii*) Establishment of industrial schools and colleges.

(2) Bounties and subsidies may also be required to encourage such ventures which people will not readily subscribe capital to, but which will produce some material good to the country, *e.g.*, utilisation of the power of water-fall. In smaller affairs also subsidies may be necessary. I give one example. There was no easy communication between Kustea (West Bengal) and Pabna (North Bengal). The District Board of Pabna promised a subsidy to a steamer company for opening a regular service betewen Kustea and Pabna. The District Board fund is a public fund and the money spent on this subsidy is spent for the public.

(3) Guaranteed dividends with or without subsequent refund may also be required to encourage companies to start business of the kind stated above in (2). Railway companies will not open lines in thinly populated localities or in localities where the expenditure for opening such lines may be considerably great and the expected income not such as to pay sufficient dividends to the share-holders. For the sake of convenience of the public and for the development of trade in future, guaranteed dividends may be necessary.

(4) Loans with or without interest may be necessary in encouraging companies to start new industries which the country may be badly in need of, *e.g.*, tannery, paper mill, sugar factory, etc.

(5) Supply of machinery and plant on the hire-purchase system is one of the most effective means of encouraging industry.

(6) Provision of a part of share capital by Government is a guarantee to the public that there is less likelihood of fraud or mismanagement. It is greatly helpful in raising capital.

(7) Guaranteed purchase is of course one of the best means of encouraging industry.

There should be Government control in all of the items of help mentioned above excepting No. (7). Government auditors should examine the accounts periodically, particularly the expenditure. This will produce the desired effect. A larger amount of control may interfere with the legitimate freedom of the managers.

Pioneer factories.

Pioneer factories are necessary in backward provinces. They will be a sort of object-lesson. Government may, for example, open a paper mill in this province, work it out successfully for some years and then hand it over to a company realizing from it cost and expenditure with interest. As soon as private companies project similar concerns, it would then be easy to dispose of and it would have served its purpose.

Concerns like a paper mill, a sugar factory should not be converted into permanent Government enterprise but a hydro-electric establishment or a munition factory may be converted into a Government enterprise.

Financing agencies.

Industries managed by joint-stock companies are sometimes hampered under the conditions in which they are financed. I give one instance in the case of a particular joint-stock company. The company first estimated its cost for starting business at Rs. 60,000. It doubled this capital and issued a call for Rs. 60,000, *i.e.*, half the estimated capital for the present, promising a dividend of 4 per cent. in the very first year. Owing to mismanagement, it could not issue the dividend but on the contrary issued calls for the next instalment of Rs. 60,000. Share-holders apprehending its ruin, did not respond. The promoters were then compelled to borrow money at such a high rate of interest, that the company at last wound up.

Banking agencies may do a good deal in helping these enterprises by lending money at a low rate of interest provided they find the working of the company thoroughly satisfactory. If Government makes such a rule that it would lend the help of government auditors to check the accounts of an involved or dying company, banks will find it then much easier to issue loans on the merit of the audit report.

With the increase of industrial concerns new banks should be opened but for industrial expansion on a larger scale, abundance of foreign capital is necessary and Government alone can secure this capital.

Co-operative credit.

I have been working here at Silchar as Comptroller of the Co-operative Credit Bank for the last four years. I have not seen any industry developed or assisted by this bank. These banks are still in their infancy and I do not therefore think it desirable to extend their sphere of action by opening other business in their connection. But, that should be our final aim—the aim of making such a profit out of extra business as can be of material help to the societies in reducing interest on loans to the lowest rate possible. I have heard of a co-operative society, somewhere near Benares, which decides village disputes and cultivates sugar-cane by free-labour investing its profits in digging tanks for drinking water for the villagers. This, no doubt, is the spirit of co-operation.

Agricultural operations and industries for which raw material is supplied by agriculture (*e.g.*, husking paddy, ginning cotton, making *gur* or sugar, making canvas from jute, fruit tinning, etc.) seem to be the best field of enterprise for co-operative societies. Godowns may be constructed to store agricultural and industrial products in order to sell them at a time when prices rise high. The work may be further extended—articles may be bought in a cheap market and held for a rise—and the like. As a productive calling agriculture has to depend entirely upon the market.

The special objects of co-operative societies should be to see that the economic condition of the members, or more widely of the villagers improves gradually and that they all become economical. The present form of organisation for the conduct of these societies seems to be satisfactory. We are now to see that central co-operative banks are opened in all district head-quarters to help village societies and to advance loans directly to agriculturists at reasonable rates of interest. Co-operative credit societies can produce little tangible effect on the condition of the agriculturists unless there is a net work of them throughout the district, and the capital at their command is many times increased. The members of village co-operative credit societies are men of limited means and they primarily join the society for the purpose of borrowing money. A very few of them can deposit money enough to meet the demand of the members.

Land-banks may be opened to help big land-owners who may be in need of financial assistance but who cannot be served by the limited funds of co-operative credit societies. For this purpose I recommend the opening of private banks under Government control, from which loans will be issued on mortgage security and re-payable over a period of years. As these will be under Government supervision, the share-holders will consider their money safe and will not object to lowering the rates of interest on which money is to be lent.

Limits of Government assistance.

There are some concerns that start business under Government guarantee or with Government bounty and subsidy. It is, of course, the duty of the Government to look to their interest. But they must not be allowed to carry on their spirit of competition to such an extent as may ruin any private enterprise. As an illustration I may mention the collapse of the Tata line of steamship. The subsidised European companies reduced their rates to such a low point—temporarily of course—that it made all competition impossible. This sort of unfair competition should be put down.

Government aid is required to foster and encourage purely Indian industry. In fair competition with any external trade, Government aid should not be withdrawn. But in cases where the subsidised enterprise is not expected to stand the competition, withdrawal of aid may be necessary. There should again be some limitation in it. For example no withdrawal should be made in favour of non-British and bounty-made sugar, paint and the like, but on the contrary the subsidised sugar factory or the paint manufacture should be encouraged with more aid if necessary in order that it may successfully compete with external trade in these articles. External trade in books, medicine, scientific instruments and the like should never be discouraged. I imagine that Japan is going to be the great obstacle to Indian industrial development in the near future and I understand her trades are heavily subsidised by her Government. She is making a tremendous bid just now to capture the bulk of foreign (non-British) trade in India. Undoubtedly she will be the most formidable competitor of all.

Technical aid to Industries.

Technical aid.

The technical and scientific aid that is being provided by government to industrial enterprise is greatly helpful but not adequate—neither in quality nor in quantity. The Sibpur Engineering College has very recently opened special departments for teaching mining, mechanical engineering and dyeing and bleaching. The mining and mechanical engineers learn the theories but not the art of conducting business. They do not do anything for themselves—of course want of capital is one of the great hindrances, but I believe the want of business training is the greatest. We often times see that a lad of 15 or 16 with little or no education enters a shop on a very small pittance and begins his work from the lowest step which is the serving of tobacco to his master. Gradually he is elevated to the position of salesman and when he is 30, he opens a shop for himself and manages it so excellently that he becomes a man of some lakhs in a few years while the M.A.'s and B.A.'s of our Universities vegetate on Rs. 50 or Rs. 100 a month and when they die, leave their wife and children almost penniless. I have seen good many of my graduate friends starting business but most of them failed—those only survived who took the help of business men. Mr. Heaton, the Principal of the Sibpur Engineering College, in his speech at the last Madras Industrial Conference, pointed out this defect in the training of his Sibpur students.

The Agricultural Department has been helping a good deal in introducing better seeds, better manure and better implements. The Entomological section has also done much to stop insect pests. But the desired result is still at a great distance. I had been deputed for sometime (about 1906) to study the method of agricultural instruction given in the Nagpur Agricultural College. The experiments performed by the Professors and the students were all very excellent. But they were so very costly and tedious that economically they could produce little or no profit. I give one example: The cows were kept there in houses which the gentry of the province do not possess. The floor was pucca-terraced with one inch thick cement plaster. The floor slanted into a pucca drain which led into a pucca tank. The arrangement was to show the process how urine could be collected for manuring purpose. The students and the Professors of the college were not agriculturists themselves—they were merely scientific theorists. I do not say that we should do away with theory altogether but what I mean to say is this: In the progress of industries we find all countries begin with art first. We are, as regards industry, in the backward state. Theory at this stage is not very useful and we should therefore sacrifice a portion of it to make room for practical art. But still for fairness' sake we must all gratefully admit that some of the demonstrations of the various research departments—especially the agricultural, show the feasibility of both increasing the quality and quantity of our products by the adoption of methods which are not beyond the means or capacity of even the poorer classes. The Geological Department is making a survey of the whole country and publishing useful information as to the openings there are for capital and enterprise. But we are sadly not in a position to profit by it. We have neither the training nor the capital. The tea industry has benefited considerably through the research of its scientific officers. We know much more than we did of pests and how to deal with them. There are great tracts of abandoned tea in these districts, the chemical constituents of the soil have shewn it to be unsuitable. Of late years much has been done in the way of scientific manuring; and in some respects it may be said that the process of manufacture has been revolutionised. What has been done for tea could equally well be done for other industries.

Assistance from Government experts.

Loan of Government experts may be given to private firms or companies on payment of small fees. I suggest that the fees be regulated according to the profitableness of the industry, the nature of the industry, and the amount of the capital; those who can afford to pay higher fees, ought to.

There should ordinarily be no restriction on the publication of the results of researches by Government experts even when they are attached to a private business. In special industries (such as bomb-making) trade secrets may not be divulged. Then again, if the research by a Government expert in a private enterprise costs the company an unusually heavy sum, then the case may be considered a special one and the results of the research may not be published. If the expert is for the time being wholly paid by the company the results of his research should be the property of the company, either to publish or reserve. If, on the other hand, he is merely lent temporarily, on a mere consideration in the shape of payment, the Government should reserve to itself the right to publish or not.

Demonstration factories.

Demonstration factory means a large establishment. But its largeness may be considerably diminished if we select one or two principal industries for each province and fit up a laboratory principally for that purpose. It should have a chemist, a mechanic and an all-round business man as director.

We require a demonstration factory in Assam to experiment in sugar, paper-pulp, beet cultivation and tannin extract principally.

Research abroad.

I do not know of any aid to any industry in this part of the province, afforded by the Scientific and Technical Department of the Imperial Institute. The representative committees of the Imperial Institute are now at work and are taking much more seriously than ever was done before, the mobilising of the industrial resources of the Empire, and of rendering the Imperial Institute an effective centre for information. Committees for India, for each of the dominions, for groups of Crown Colonies and protectorates, as well as technical committees dealing with minerals, rubber, timbers, silk, etc., have been organised. This is a move in the right direction.

The Indian committee is "to enquire into and report on the possibilities of further extending the industrial and commercial utilisation of Indian raw materials in this country and elsewhere in the Empire." The Institute has investigated more from the scientific and technical, than from commercial standpoints opium, podophyllum, turpentine, resin, cotton, flax, jute, silk, Burma beans, tanning and paper-making materials, etc. The committee will do excellent service if it investigates more on commercial lines.

In addition to the arrangements for research in India it is sometimes advantageous to have provision for research of special subjects in the United Kingdom. For chemical analysis there are in England far better arrangements than what we have got here in this country. Moreover the chemists of England are highly capable men. For the methods of preparing and testing drugs and chemicals, for refining sugar, for enamelling utensils for processes of stamping, for cheap crockery, for refining metallic ores, for freeing iron from sand (in the manufacture of glass), for tanning leather, for producing dyes, etc., we may refer to England.

The Advisory Council for Research in England can help us a good deal by supplying information regarding the process of manufacture of various articles.

Research problem in India.

There should be for each province a Director of Industries with a small advisory committee of about a dozen members half of which should be educated Indians connected with industry or commerce. This committee will refer research problems to science colleges and other technological institutions in India.

There should be branches of it in all the district headquarters. The head office should be in a position to provide every kind of information the branches might require for the development of existing industries and in establishing new industries. The work of the district committee should be to put before the public proposals and some ideas in which way certain industries should be carried out and what machinery and what expenditure would be incurred and also what profit could be made out of them. The chief aim of the district committee should be to form companies. If companies are floated people will take a larger interest in the work, than if such concerns are financed by single persons.

Surveys for industrial purposes.

The existing knowledge of the available resources of the country is not sufficient for economical purposes. The departments carry on business more on official than on commercial lines and their notes on researches are therefore more of an academical character. In agriculture more might be done in the distribution of more suitable seed. Some years ago Rev. Mr. Reese of Silchar sent specimens of cotton and cotton seed to the Manchester Chamber of Commerce. The cotton was from the North Cachar Hills. He was informed that the soil which grew that cotton would readily grow one of a much more productive type. But the distribution of such seeds should be pushed through Government officers.

The survey may be organised with the prime motive of increasing the wealth of the country and helping commercial enterprise. The experts in each department of science should be directed to devote their energy in some special subjects, in consideration of the resources at their command, and devise the best means for utilising them in commercial purposes. For example, Mr. Puran Sing of the Dehra Dun Research Institute may be directed to find out the plants that will yield the largest amount of tannin at a small cost. (Mr. Sing has done something in this direction).

The result of this kind of enquiry may be communicated to the district committee, and the district committee in its turn will communicate it to the people, especially to those who may want to know anything about a particular industry. Small pamphlets in the vernacular will be one of the best media. Much might be done by encouraging schoolmasters to lecture in their own districts on the subjects.

Assistauce in Marketing Products.

Commercial Musaums.

The Calcutta Commercial Museum is simply a show room of diverse industries. It is visited mostly by those who do not do anything in industry or who carry on business on a large scale. But it is still an important institution, so any remarks which we may be disposed to make regarding its working may be premature.

We want museums of such small industries as can be managed with small capital and of cottage industries that can be taken up by the majority of the poorer population. The district committees should first prepare a list of small and cottage industries which it wants to encourage and then it should collect such articles for the district museum as will stimulate the growth and development of industries that it contemplates to foster. If we do not aspire to open showy museums, it will, I think, be not at all impracticable to open a useful and instructive one at each district centre. The collection will not be costly if the members put their hearts into it. [I have opened such a museum in the Silchar Normal School house, of course more for educational purposes than for commercial. To arrange the exhibitis, I purchased some almirahs and some glass phials. The cost was nominal].

Exhibitions.

There should be fixed days for demonstration in district centres. Intelligent craftsmen are first to be picked out from the villages. They are then to be invited to come to the station to witness the demonstration. In some cases it might be necessary to give them travelling expenses and diet money. The aim should be to teach them thoroughly the art and get models prepared by them at the headquarters. They may then be dismissed with sufficient loans to carry on the trade.

Germany had floating museums of her products visiting all the parts of the world. We cannot for the present aspire to such a big scheme, but we may arrange for visiting towns on the river side. One province does not know what her neighbouring provinces produce. I give below a list of larger, smaller and cottage industries that I hope may be suitable for Assam. The list I must say is not complete. It is merely suggestive : —

I. *Large industries.*—(1) Paper pulp and paper mill, (2) Sugar factory, (3) Rubber plantation and manufacture, (4) Silk spinning and weaving, (5) Match factory, (6) Lime and limestone, (7) Coal, (8) Petroleum, (9) Tea, (10) Pottery, (11) Sawmill, (12) Tannery, (13) Iron and steel work, (14) Oil-pressing, (15) Glass manufacture, (16) Drugs, chemicals, perfumery and dye-stuffs, (17) Paddy and rice making.

II. *Small industries*—(1) Tiles, (2) Poultry, (3) Pen-holder making, (4) Fruit gardening and fruit-tinning, (5) Fish curing, (6) Handloom, (7) Dairy,

(8) Soap making, (9) Button making, (10) Carpentry, (11) Dyeing and bleaching, (12) Celluloid, (13) Perfumery, (14) Varnishes, (15) Paints, (16) Bricks, (17) Lac, (18) Oil, (19) Wheat, (20) Rice, (21) Toy-making, (22) Smithy, (23) Horn and hoof work, (24) Pine-apple and plantain fibre making, (25) Casava and *Sauti* flour making, (26) Cheap umbrella making, (27) Honey making, (28) Brass work, (29) Walking stick making, (30) Enamelling of toys.

III. *Cottage industries*—.(1) Handloom, (2) Mat-weaving, (3) Basket weaving, (4) Palm leaf weaving, (5) Window *chick* making, (6) Crochet work, (7) Papier-machie, picture frames, trays, vases, boxes, etc., (8) Clay modelling—fruits, flowers, leaves and dolls, (9) Drawing, (10) Embroidery, (11) Carpet, (12) Lace and neck-ties, (13) Hosiery, (14) Knitting socks and woolen caps, (15) Tape and lamp wick making, (16) Small coats and pinafore, (17) Jellies and pickles. (18) *Chutneys*, (19) *Bade* and *Panfore* made of *dal* paste and dried, (20) Straw-hat making, (21) Making of dolls with cotton and rags, (22) Rope making, (23) Thread spinning, (24) Vegetable growing, (25) Silk worm rearing, (26) Calico-printing.

Sales agencies.

Industrial development rests mainly on the market and sales-agencies are one of the chief factors to command it. There should be sales-agencies in all the headquarter stations of the province. The district committee will first send samples of the manufactured articles to these sales-agencies requesting them to display the articles in their show-rooms and try to procure purchasers for them. The sales-agencies will get a reasonable commission on the sale-proceeds.

Industrial Exhibitions

Industrial exhibitions inspire manufacturers with healthy emulation and enable them to make the products of different provinces known to one another, and they also enable traders and dealers to obtain first-hand information about all articles that they want for the market. The things on which large emphasis should be laid at the beginning should be useful and profitable and for their manufacture should require only ordinary skill and intelligence. Industrial exhibitions, which simply awaken the consciousness of one's own ignorance with regard to everything, depress, rather than inspire. A few things well chosen, and well within the capacity of the people to produce would be more stimulating than a whole cosmos of miscellaneous exhibits. An encyclopædia is useful; it is not stimulating. If arrangements can be made to teach people some of the different arts required, exhibitions will be made more useful. The Allahabad Exhibition of 1911 made excellent arrangements in this direction. But there was one defect. There should have been fixed dates for the demonstration of some of the minor industries. I showed the process of raised map-making but a good many of the visitors who had interest in education missed it as they did not know the date and hour of my lecture.

The Secretary of the Department of Commerce and Industry in consultation with the provincial Directors of Industries might arrange for these exhibitions. The Government policy should be mainly the teaching of any new or the improved western methods in the manufacture of various articles. Encouragement in the shape of rewards should also be given to those who manufacture the most useful things by the easiest method, in comparatively less time and with less cost.

To attract visitors the exhibition should of course be of a popular character but more attention should be paid to demonstration of the best process of manufacturing such articles as may find a good market in this country. To bring sellers and buyers in contact should be the next aim.

Foreign sub-agencies.

Arrangements should be made with foreign mercantile agencies for pushing the sale of Indian manufactures. The British consuls stationed in the various countries may be asked through local dealers to open show-rooms exhibiting Indian industries in art-wares, fabrics, etc., with descriptive catalogues and prices.

Temporary Commissions.

Temporary commissions for special enquiries in the cause of decline of the sale of any particular class of goods might sometimes be necessary. They might also be necessary where the goods of other countries more than compete with the products of this.

Inter-provincial trade representatives.

The district committees may do the duties of trade representatives. In the district show-rooms or museums may be exhibited, with descriptive catalogue and price, the articles that are manufactured in other provinces.

Purchase of Government stores.

The Government departments which use imported articles should not only publish lists of these articles but also exhibit them in the commercial museum. This will give the intending Indian suppliers an idea of the special characteristics of the articles which the Government wants to patronise.

The rules relating to the purchase of stores by Government will work very well if the agents who are deputed to purchase them take a little more care to enquire which of the articles are available in the country. The agents may also show samples of the articles they want and thus encourage the manufacturers in producing them after the models. Purchasing agents should sometime be called upon to explain the cause of their failure in procuring particular articles and they should be punished if on enquiry it is found that these articles are available. One or two such cases of punishment will improve matters a good deal. Again, if a reward be promised for the manufacture of a particular class of

article for which there is plenty of raw material in this country, it will be a good incentive to purchasing-agents as well to manufacturers.

Banking facilities.

New banking agencies should be started to assist artisans in marketing their products. These banks will advance money to the artisans and purchase their articles at a reasonable price. They will then send those articles abroad charging on them a price that will cover the interest on the money advanced *plus* a small profit. One or two of the most successful co-operative credit societies may open a sale-agency section for experiment.

Other forms of Government aid to Industries.

upply of raw materials.

In this province of Assam there is abundance of grass and thin bamboo that may be used for making paper-pulp. Government at present gets no profit out of them. Manufacturers may be allowed the free use of them for at least ten years. When the manufacture gets into a thriving condition, royalty may be charged first at a very small rate and subsequently with the gradual development of the industry, at enhanced rate.

and policy.

Settlement operations and the consequent re-assessment are considered a source of hardship specially by the agriculturing class. I give one example to illustrate a typical complaint. X has a plot of "third class" land in his possession—it grows no crop. He works on it hard to improve its fertility. When he has done it, the village Patwari will at once mark and classify it as "First class." In the re-assessment the rent increases a good deal. Possibly he can not pay it, and the land passes over to Y one of his rich neighbours. So X does not think it wise to work for Y. Of course the fertilised land brings X more crop to enable him to pay the enhanced rate but still he is not satisfied. He thinks that he is justified to reap the full benefit of his labour. X therefore does not work with his whole heart on the land which he possesses but temporarily. His argument is this : if a man who lives in a hired house, makes some substantial addition to the house at his own expense, the owner of the house will not for that reason enhance the rent but in some cases will lower it in consideration of the money spent by the occupant. An enhanced rent of course will be charged from the man who next occupies it.

I do not, however, recommend the extension of permanent settlement into provinces where it does not exist, but I believe a modification of the existing system on the lines suggested in Lord Ripon's resolution of 1881 and 1882 may remove the hardship or lessen it considerably.

When a company wants the settlement of waste-land for the purpose of opening a new industry, the Government may grant it rent-free for some years. Then with the development of the industry rent may be charged, gradually at quarter, half and full rate. With regard to settled land the procedure should be otherwise. The Government will first acquire the land for the company at a reasonable price. Then it will charge quarter rent for the first 10 years, half for the next five and then full. For industries that have already proved a success (*e.g.* tea in Assam) no concession is necessary.

I have no criticisms to offer on the working of the Land-Acquisition Act. Adequate compensation should be given in all cases to such an amount that there might be no necessity for High Court appeal.

Training of Labour and supervision.

raining of labour.

Practically no steps are taken to improve the labourers' skill and efficiency.

Before suggesting remedies, I first point out the deficiencies—natural and acquired—of our labourers. They are (1) weak physique, (2) disregard for punctuality, (3) fraudulent motive to do less work than he is required to do, (4) indifference to the interests of his employer, (5) want of education. For remedy I beg to suggest that the labourer should first be taught the 3 R's in some night school organised for this purpose in or outside the factory compound. Secondly he should be taught a little drawing and clay modelling. Thirdly he should have regular exercise in drill. This general course I recommend for the labourers' night school. This training may remove most of the defects referred to above. In addition to this, managers must see that the labourers get sufficient food and that they live in healthy houses. They should also be taught the simple rules of hygiene and they should be compelled to observe them.

(b) To make him fit for any industry he must be taught a little carpentry or "sloyd" along with drawing and clay modelling. The ordinary works of house-making and gardening are helpful in developing technical skill.

raining of apprentices.

I have seen apprentices being trained in the railway workshops, in the Telegraph Department workshop and in Messrs. Burn & Co.'s workshop. Those that get training at Messrs. Burn & Co.'s secure better employment. I have also seen apprentices being trained in the Sibpur Engineering College and in some of the technical schools in Bengal. The Sibpur men learn carpentry, blacksmith's work and a little electrical manipulation. The technical schools teach carpentry and smithy. The training given to these apprentices does not help them much in opening any trade. They are taught more on the engineer's line than on the trader's—and considering the time that is spent in this kind of apprenticeship, the training received is very poor. The artisan-apprentices are given the same amount of leisure and leave, as are allowed to the regular engineering students who study a good many theoretical subjects in the class-rooms. Again they are taught to spend the same amount of

time on their models as are spent by the students who desire to become overseers or engineers. So the apprentices are made "Babu artisans"—to quote a tea-garden manager who recently employed one of them. A Chinese carpenter is more industrious and skilful than our technical school trained men. So it is more profitable to engage a Chinese carpenter. There is a complaint from the Department of Education that the trained men do not get adequate encouragement from the mill and garden-owners. Here is the reason for their antipathy. Practically there is no such institution in this part of India where apprentices can get thorough business training.

Industrial schools.

I have seen some weaving schools working the new looms. (Fly shuttle and the automatic.) People show no eagerness to learn the use of these looms. First because the quality of cloth which these looms produce is not very fine. Mill cloth is much cheaper in comparison. Loom-made coarse cloth has no market here. Our hand-looms produce a much finer quality than what can be produced in mills. It is for this reason that hand-loom industry is still surviving. Some experts told me that finer cloth could be made with the fly-shuttle. But better demonstrations are wanting.

I know of another industrial school which was opened at Pabna (North Bengal) by Babu Bhagwan Chandra Bose, father of Sir Jagadis Chandra Bose. The apprentices were taught brass and bell-metal work. The school was closed soon for want of capital. Bhagwan Babu was a well-intentioned philanthropist but not a business man.

If we seek any permanent results, we must put our industrial schools under business experts.

If we open industrial schools, where a little theory will also be taught, we must open a separate class for apprentices who will do no theory. They will work hard in the workshops so that they may combine labour with skill.

Night schools.

Night schools for labouring classes offer educational opportunity along three lines:— (1) A repetition of the work of the regular elementary and secondary school, (2) vocational instruction chiefly along commercial and industrial lines, (3) general informational and cultural instruction for those whose daily work offers little or no opportunities for such instruction. These schools materially help the education of the working people. One feature of special significance is the greater adaptation of these schools to the needs of the people than is found in the ordinary day schools which are largely bound down by traditional subjects and traditional methods.

These night-schools will be opened at convenient centres suggested by the district committee. They will be organised and financed by the Education Department. The minimum age for admission in England is 12 years because the law of the country requires all between the ages of 5 and 14 to attend day schools to learn the 3 R's. But here in India there should be no age restriction. These schools may also receive grants from Local Boards. Tuition in all cases should be free. The ordinary school time will be from 7 to 9 for four evenings every week and twenty-five weeks a year. The greatest difficulty with these schools is irregular attendance. Teachers may be given capitation allowance along with their pay to improve attendance. The course of studies may be as follows:—

I. Book-work.—Reading, writing and arithmetic.

II. Hand-work.—Drawing, clay-modelling, paper-modelling, mat and basket-weaving and "Sloyd."

III. Physical exercise.—Drill and "*Kasrat.*"

His Imperial Majesty the King-Emperor, in reply to the address presented by the Calcutta University, most graciously said: "It is my wish that there may be spread over the land a net-work of schools and colleges from which will go forth loyal, manly and useful citizens able to hold their own in industries and agriculture and other vocations of life." Here "industry" has been put first but our present educational authorities work in the inverted order, *i.e.*, they prepare students for other vocations of life (clerkship, teachership, pleadership, etc.,) first, agriculture next and industry never; so we should rather let the two departments—the Department of Education and the Department of Industry work out their schemes independently. Let the Department of Industry begin its work in the right order, *i.e.*, industry first, agriculture next and other vocations of life last. Our Education Department has become much too stereotyped. It has been working on its traditional line—teaching subjects that produce little pecuniary benefit. We want the industrial schools run on such a business method, that every step of it may produce something tangible to attract learners.

Training of supervisors.

I do not know of any institution in this country where our supervisors of all grades and skilled managers may be trained. Messrs. Burn & Co.'s workshop may be a good ground for the training of supervisors—in the absence of better arrangement here. But for the training of skilled managers, we must seek the help of foreign countries.

In foreign countries Indians do not very easily get admission into the industrial concerns where they want to learn any trade. This difficulty may be considerably removed if the managers, supervisors and technical experts of private firms are deputed by the Government for such training.

For industries assisted by Government, technical experts should be trained either in India or elsewhere—considering the nature of the industry and the amount of skill required

to conduct it. The expenses will be borne by the company from which the man will be deputed. Whether a man is to be trained in India or outside—will be decided in a meeting of the directors of the company—one of these directors will, on instruction, represent the Government.

Mechanical Engineers.

There is a want of uniformity in the standard of examination for Mechanical Engineers held in the various provinces. It is desirable that the test should be uniform. The India Government may lay down a common syllabus for all these engineering schools.

Those who are put in charge of prime movers should be qualified men—they must know the theory as also art. Only certificated men should be selected for this purpose.

General Official Administration.

Existing organisation.

For the development of industries there is only one department in this province, the Department of Agriculture. It is under a Director who is an I. C. S. consequently a non-expert. He has of course expert assistants under him, but as headman in the department, he should possess sufficient knowledge of the subject to guide the officers under him and to inspect their work. The reason for putting an I. C. S. at the head of the department is a proof that our agricultural graduates do not possess the capacity of managing business. In Bengal the Education Department was once put under an I. C. S., the I. C. S. officers being mostly all-round men and not merely theorists.

Proposed organisation.

There should be a Board of Industries in each province. It should be merely advisory. The executive power and budgetted funds will rest with the Director of Industries. The Board will be comprised of official and non-official members—half of whom should be educated Indians connected with agriculture, industry or commerce. Their duty chiefly will be to help the Director with suggestions. The Director of Industries should be a business man and not a non-expert official. He may or may not be an expert. He must be a man of wide practical experience in India and abroad. He will occupy the same position as is now done by the Director of Agriculture.

There is no necessity for the present to form an Imperial Department of Industry. With the expansion of industry, it will be necessary to create one. For the present the Secretary of Commerce and Industry of the India Government will correlate the separate activities of the various provinces. Under his guidance the Directors will meet at convenient centres to exchange their views.

Organisation of Technical and Scientific Department of Government.

Existing organisation.

There is at present no satisfactory arrangement in the province for the assistance of industries. In connection with the Agricultural Department, five experimental farms have been opened but the assistance that these farms give to the public in the form of demonstration is very meagre—considering the bulk of the agricultural population. "Without a full staff" says Mr. Edwards, the Director of Agriculture in Assam, in his last Annual Report for 1916, "it is impossible to work adequately." I also endorse his opinion.

I do not for the present recommend the formation of any new Imperial Scientific and Technical Department. We must first make a little progress towards such industrial pursuits that may not require much of higher researches.

Provincial organisation.

Provincial Government should engage the services of the following experts :—(1) A Chemist. (2) A Mechanical Engineer. (3) A Botanist knowing forestry. (4) An Agriculturist knowing entomology. (5) A Bachelor of Commerce of the Birmingham or Manchester University. (6) A certificated Auditor of Accounts.

These experts are to be placed under the direct control of the Director of Industries. I beg to suggest that our present Forest and Agricultural Departments should be placed under the Director of Industries. The following diagram illustrates what I mean :—

Director of Industries—A business man of long experience.

There should be no restriction of age or nationality.

Deputy Director of Industries—An Indian Civil Service with office for the registration of banks, companies, patents, etc.	Assistant Director of Industries. A chemist from England or Russia with a big laboratory.

(1) Agricultural Department under a Superintendent of Agriculture. (An Agriculturist trained in Europe or America.)	(2) Forest Department under a Superintendent of Forests (A forester trained in Europe or America.)	(3) Mining Department under a Superintendent of mines. (A geologist trained in Europe or America.)	(4) Factories under an Inspector of Factories. (A Mechanical Engineer trained in Europe or America.)	(5) Banks under an Inspector of Banks. (A certificated Auditor with business experience.)	(6) Commerce unnder an Inspector of Commerce. (A graduate of Manchester Commercial College.)

These experts will all be whole-time Government servants in the Imperial service. The best men should be recruited to fill up these posts and they should therefore be offered

better remuneration. Inexperienced young officers of indifferent qualifications will do no good.

Technological Institutions.

One of the existing scientific institutions may be converted into a technological institution or a branch may be opened in connection with one or more of them. We should have well-equipped laboratories attached—where anybody on payment of small fees, can have specimens of materials analysed for ascertaining their industrial value.

As regards investigation and research, each institution will deal with a group of related subjects. These subjects will be selected in consultation with the experts in the Industrial Department of each province. The nature of industry for which the province is fit, the agricultural condition and the prospecting activities will suggest these subjects.

There should be Government control and it should be provincial. Government may from time to time engage experts from amongst those who are already in Government employ to inspect the working of these laboratories.

Co-ordination of research.

Unnecessary overlapping of the research activities in the different scientific departments and University colleges should be prevented. Each institution will work on its own line, and each investigator will confine his researches to the subject with which he is most capable of dealing. There should be competition among the different institutions regarding the amount of useful research work done by them. Energy is often dissipated by the useless duplication of enquiries.

The Indian Science Congress has not yet done anything tangible to justify its existence. However it is a conference where our best scientific heads meet to exchange their ideas. It is an infant institution. If the Congress on the line of the Imperial Institute appoints sub-committees in the various provinces to investigate resources with the idea of helping industry and publish their results in vernacular—not in the scientific but in the popular way then it may do some good.

Study of foreign methods.

Government scientific and technical experts should be sent to Europe, America and Japan to study the improved methods of mining, agriculture, forestry and manufacture of various useful articles. Government will bear the cost first and then realize it from the private companies who may want a loan of their services.

Reference Libraries.

There is not in the whole province a library in which a copy of the book like Cooley's Cyclopædea of Practical Receipts—a book almost of every-day reference—can be had—not to speak of other books of reference on scientific and technical subjects. There are some scientific books in the Cotton College library but they are more of the nature of class books than practical guide books. So a good library of guide books in science and industry is badly wanted. A big library of these books may be attached to the Cotton College library at Gauhati and this branch may be open to the public for reference. Smaller libraries of most useful guides may be opened in connection with every Local Board at the headquarter stations only.

College of Commerce.

I do not think it necessary for the present to open a college of commerce in this province. One such college at Calcutta may do for Assam, Bengal, Bihar and Orissa. The college should be organised on the lines of the Manchester College of Commerce.

Most of our students who come out of schools and colleges find nothing to do. A good many of them try business but fail for want of business-training. If they get it in commercial schools and colleges, they may earn a decent living. Ninety-nine per cent of the school-going population, attend school for learning the art of money-making. If industrial schools are opened and if they are organised on better money-making lines, the present pressure on our University schools and colleges will greatly diminish.

Government Organization for the Collection and Distribution of Commercial Intelligence.

Statistics.

I have no criticisms to offer on the present system of collecting statistics. But with regard to their distribution I beg to suggest that the portion which is likely to be of any help to the public, may be published in the vernacular in an abstract form for free distribution. For the present of course there is no demand for them but with the spread of commerce, the demand for them will increase. Extracts from the "Assam Gazette" relating to industry might very usefully be published in book-form annually. The Gazette contains a good deal of valuable information at times but outside Government servants few ever read it. The local papers simply publish official changes.

"Indian Trade Journal."

The "Indian Trade Journal" is a useful publication. Bigger merchants only get a good deal of help from it.

Some arrangements should be made for the dissemination of information through the vernacular. These papers should not contain learned articles but should give practical directions on small industries and agriculture.

Special publications.

The publications from the Geological and Forest Departments mostly contain research articles. They may not now be of any practical value, but when people will take to mining and trade in forest resources, they will find in them good many things ready-made for their guidance. These papers should also contain such extracts from the Continental and American papers on Geology and Forestry as may be of some interest to Indian readers. The Industrial Department, when organised, may think of publishing a paper on the lines of the "Scientific American".

Peripatetic demonstration.

We may do more good if we send industrial preachers into the villages to demonstrate before the artisans and peasants the various improved methods in agriculture and industry. Mr. Swan's remark—"one demonstration is more convincing than a dozen monographs" is true to the letter specially in our country where only 5 per cent of the population is literate. And this literate portion again is neither the artisans nor the agriculturists. So paper-publications will not be of much use. In the Bombay Presidency, they send gangs of sugar-boilers to the different villages to show the better methods of preparing *gur*. A similar course should be adopted in all kinds of industrial pursuits.

Other forms of Government action and organization.

Certificates of quality.

For food-stuffs and medicines certificates of quality should be compulsory. The quality of tea, for example, should be certified. For other products, such as cotton, jute, etc., compulsory certificate may not be insisted upon. The chemist attached to the Industrial Department of the province will examine food-stuffs and grant certificates. With regard to the examination of other articles, non-official experts may be engaged if necessary. They will get adequate remuneration in the form of commission. Penalties should be imposed for the adulteration of food-stuffs and medicines only. The chemical expert of the province or the medical officer of the district will examine the quality and prosecute the offender.

Improved communications.

Assam is very poor in railway lines. Extension is desirable to increase transport facilities. A railway line from Gauhati to Shillong is necessary for the transport of potato, pine-wood products, corundum, iron, etc. A line from Sylhet to Chhatak is necessary for the transport of lime, lime-stone, potato and oranges.

A line from the foot of the Garo Hills to the bank of the Brahmaputra is necessary for transport of coal, cotton and timber from the hills.

A bridge over the Surma near Sylhet and one over the Brahmaputra near Gauhati are necessary to lessen the trouble and cost of transhipment.

Water-ways are necessary in the forests. Many streams have become choked specially at the confluence. Means should be devised for the protection of the channels by dredging and constructing anicuts where necessary. A great quantity of timber is left to rot in the forests for want of transport facilities.

Railway Rates.

It is a general complaint that railway freight on goods is very high in India specially in Assam. Again rates on some articles are higher than rates on other articles of a similar kind. This remark applies with equal force to shipping freights. Tea is exported by rail and steamer at a considerably lower rate than other agricultural products.

The only effective means to remedy such an anomaly seems to be the empowering of the Railway Board to interfere, to make a re-classification of goods, to make the rates similar and to make the decisions of the Board binding on all railway and steam navigation companies.

Hydro-electric power.

Nothing has yet been done towards ascertaining the possibilites of hydro-electric arrangements in this province. But there are a good many water-falls of sufficient power (in the Khasi and Naga Hills and on the southern slope of the Himalayas) which may be very profitably utilized for industrial operations.

Mining rules.

I have no experience of the difficulties in the working of the Mining and Prospecting rules. This much I may suggest in this connection that Government should give preference to Indian applicants over outsiders in the grant of prospecting license and mining lease.

Corundum is required for the manufacture of munitions of war. It may be had in abundance in the Khasi Hills. The Khasi Hills Prospecting and Mining Company are working the mines.

Forest Department.

The policy of conservation of forest for future continuous supply is greatly helpful to industrial enterprises. But with regard to the working there are complaints which should be investigated. (1) For tea-box making timber, the Forest Department is granting a concession. But no such concession is granted to timber locally used or exported for other purposes. (2) The Calcutta market is flooded with timber from Burma and Australia, but Assam timber practically has no place there though Assam is nearer Calcutta. One of the causes may be high transport charges by rail and steamer, but high royalty seems to be another cause. I would therefore recommend the reduction of royalty in some cases and grant of concessions for a certain period in special causes. The duty on lac should be withdrawn as it does not grow wild, but has to be cultivated. Government should also consider whether more liberal rules cannot be framed in respect of grazing and the existing rules more liberally worked providing greater facilities to the ryots without real injury to the forests. Fuel-wood should be cheapened so that cow-dung may be used by the cultivators for manuring purpose.

The cost of assembling raw products is very high. This is another cause of the rise in the price of timbers. Opening of good roads and tramways and adopting other mechanical means of extraction by State agency may help a good deal in bringing raw forest products in the market at a much cheaper rate. One reason for the high price of forest material is undoubtedly due to the fact that on both banks of the river land has been given for cultivation. If the forest were kept intact on the one side, and double the quantity of land granted for cultivation on the other, it would be possible to get out the forest materials. I believe that neglect of this obvious method of preservation in the near past has generally enhanced the cost of materials. Bamboos and timber have gone up by about 100 per cent in Silchar during the last 15 years.

The concentration of special kinds of trees in limited areas is desirable in localities where there is great demand for timber of a particular species. This can be effected by gradually removing undesirable trees and selling them at a reduced price and thus encouraging the growth of trees for which there is great demand, or by removing the entire existing crop at some selected locality (for experiment) and planting the area with a particular kind of tree. As regards waste land along river side, it may be grown over with *Simul, Sisoo* or *Khayer*.

There are no good cart-roads, no tramways and no canals in the forests. There are of course streams and rivers, but a good many of them dry up in winter. A net-work of good cart-roads should be constructed in the forests. Considering the importance of transport, tramways might be constructed in some localities. The channels of water that have been silted up should be dredged specially at the confluence. If practicable, some canals may also be constructed.

General.

I belong to the Education Department and I have been for the present put in charge of a Normal School where my duty is to train teachers. Teachers are generally poor men. I therefore teach them some small industries by which they can earn a little more. They are these :—

(1) *Fruit-gardening.*—Orange-gardening is the oldest occupation of this Valley. It is successful. New varieties should be introduced. I tried the all-season variety but failed. Pine-apple is another grown abundantly. The fruits are much sweeter. I introduced the Singapore variety. The fruit is larger, sweeter and softer. It is a success. Guava may be grown here in larger area. There is a very good market for it in Calcutta. Guava jelly may be manufactured and sent to all parts of India. The *Kasi* and *Kafri* varieties thrive very well. There are many guava gardens in the Jubbalpur District (Central Provinces) which support a good many families. I have introduced the strawberry guava. It thrives very well. This delicious fruit has not yet seen the Calcutta market. It will be quite welcome there. I tried to introduce the foreign fruits. The vine thrives here but it yields sour grapes. However, these may be utilized in making mild wine. Fruit-gardening.

(2) *Flour-making.*—*Sauti* (it growns wild) flour is a good food for infants and invalids. It has a good market in Calcutta. A good quantity of it is exported every year from Barisal to Calcutta. Casava may be grown without any cost. Casava flour has also a good market value. Arrowroot will also thrive here. Flour making.

(3) *Scent-making.*—There is a kind of *Binna* grass in this province which yields a good quantity of scented roots. This root has a good market in Calcutta. Door-screens for the hot season are made of it. I also show the teachers the method of extracting the scented oily portion from the roots by the ordinary evaporation method. It has good market value. There are also 3 varieties of scented shrubs which may yield a good quantity of scented oil. Perfumes.

(4) *Screen-making.*—Artistic screens may be made of split bamboo or grass leaves. I teach this art. When painted with oil colours, they look better than the ordinary Japanese screens. Screens.

(5) *Raised map and Raised globe making.*—This art has been so successful that a good many of my students have been regularly carrying on this trade—the profit is nearly 50 per cent. Raised maps and globes.

These and similar kinds of small industry may be taught by the demonstration method.

India seems suited for the following industries on account of its resources in raw materials :— General.

Cotton, silk, tannin, glass, paper, pottery, drugs, chemicals, sugar and iron.

Here is a small list of raw materials of which the use in industry is retarded by preventible causes :—

(1) *Salt.*—A good many useful salts may be manufactured from the common sea-salt. But on account of the prohibition of salt manufacture, other articles also could not profitably be extracted from it.

(2) *Cotton.*—Its export should be stopped and greater care should be taken to grow better stuff in larger areas. For the sake of protection, foreign yarn should not be exempted from duty and excise duties should not be imposed on Indian goods.

(3) *Sugar.*—Import of foreign sugar especially bounty-fed sugar should be gradually stopped and encouragement should be given to open sugar factories. Permission should also be given to manufacture rum and alcohol for the utilization of the bye-products.

(4) *Alcohol.*—Potato grows here in abundance. Alcohol can be very cheaply manufactured from it. Alcohol is required for *alcohol-motors* for driving electric generators. The excise law should be modified to permit the manufacture of this very useful article required for driving our present-day machines.

These are some of the good cases for investigation :—

(1) *Fibres of various kinds.*—Little use is made of the pine-apple and nettle fibres.

(2) *Sand.*—It should be examined thoroughly for glass manufacture.

(3) *Iron.*—Mines should be explored for opening more iron manufacturing firms.

(4) *Paper-pulp.*—The vegetable resources of the province should by thoroughly examined for this pulp.

(5) *Mineral water.*—Spring water should be examined for their curative properties.

(6) *Pottery.*—Clay should be examined for it.

(7) *Sweet-potato (Red-potato).*—It grows on every soil and it grows abundantly. This underground stem (like the potato) may be examined for sugar manufacture.

(8) *Beet.*—Its cultivation for sugar manufacture.

(9) *Wood.*—Thorough investigation is necessary for determining (1) the sort that will suit match manufacture and (2) the sort that will suit wood-engraving.

ORAL EVIDENCE, 5TH JANUARY 1918.

Sir F. H. Stewart.—*Q.* You refer in your note to the experience you had in raising capital. Was it a considerable sum that was raised for the spinning and weaving mill at Rangpur ?—*A.* Yes, a very considerable sum ; it was over 2 lakhs of rupees.

Q. And the Bengal Provincial Railway Company had a larger sum ?—*A.* Yes, a much larger sum, but I do not remember the amount exactly.

Q. Is the railway running now ?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.* What dividend was the railway paying ?—*A.* A very low rate, only 8 per cent.

Do you call that a low rate. I do not know of any railway paying more than 8 per cent.

Sir F. H. Stewart.—*Q.* Your latest experience has been with the All-India Tea Company ? —*A.* Yes

Q What is the capital of that company ?—*A.* Up-to-date they have collected about a lakh.

Q. Is it a registered company ?—*A.* Yes.

Q. When was it started ?—*A.* It was started two years ago.

Q. Is it working successfully ?—*A.* They have not yet undertaken proper work. They have secured land and have been planting tea seeds only.

Q. What is the idea of the company ? Is it to be a tea garden ?—*A.* Yes.

Q. Is it for the retail sale of tea or anything else ?—*A.* It will be a tea garden and for the retail sale of tea also.

Q. You say under the heading "financing agencies", "If Government makes such a rule that it would lend the help of Government auditors to check the accounts of an involved or dying company, banks will find it then much easier to issue loans on the merit of the audit report". But the harm will have been done then, and the auditor's report will only disclose a bad state of affairs ? What you want is to prevent the company beforehand from involving itself, is it not ?—*A.* But if a timely notice be given to the Government with regard to the affairs of the company and the auditors come and examine the accounts, the company might not collapse.

Q. Do you think that Government should intervene ?—*A.* Government intervention is necessary because people have much confidence in Government work.

Q. Do you think that Government should go so far as to appoint directors ?—*A.* Yes.

Q. You say that you have been working at Silchar as Comptroller of the Co-operative Credit Bank : that is, you were working in an honorary capacity ?—*A.* Yes.

Q. You say it has not developed or assisted any industry as yet ?—*A.* Not yet.

Q. What does it do ?—*A.* It does only loan business.

Q. At what rate does it lend its money ?—*A.* At 12 annas per cent. per month.

Q. How long ago was the Bank established ?—*A.* It has been in existence for the last 8 years.

Q. When you say that you are the Comptroller, do you mean that you are the manager ?—*A.* No, I only audit the accounts.

Q. Have you any voice in the management at all ?—*A.* No. Of course I give my suggestions and they accept them.

Q. Has it got branches, sub-banks ?—*A.* Yes, there are some branches in the villages, but properly speaking they are not in good working order. I mean the Bank which is located at Silchar has no control over the village banks.

Q. You say that when Government loans experts to any private concern, there should be no restriction on the publication of the results of their researches : don't you think that it

will be a little hard on the private concern ?—*A.* I have mentioned everything in my paragraph. If you will kindly read the whole paragraph you will find my answer to the question you have just put to me.

Q. But don't you think it should be possible for the firm to say that the results of the expert's researches should not be published. for a definite period, say, for two or three years ?—*A.* That will entirely rest with the company who will engage the expert. If the company spends a good deal, then it might not publish the result, but if the expert is engaged only temporarily, then the result might be published. Of course that will be left entirely to the discretion of the company and the expert.

Q. You say that you have opened a museum in the Silchar Normal school: do many people go to see it ?—*A.* Yes, a good many people come to see. I held a decennial conference of all my ex-students this year: I held an exhibition in this connection of school-made articles, and it was attended by over 500 visitors including European ladies and gentlemen. It was opened by Miss Lloyd, the head-mistress of the Mission Girls' School.

Q. What sort of articles were you exhibiting ?—*A.* I was exhibiting school-made articles, such as raised maps and globes, diagrams to show the changes of the season, changes of day and night, and so on; and also bamboo, cane and paper made articles.

Q. The exhibition was for educational purposes, it was not an industrial exhibition ?—*A.* No.

Q. Do you think that the same system of exhibitions could be applied to small industries in order to encourage them ?—*A.* Yes.

Q. You go on to give a list of large and small and cottage industries that you hope may be suitable for Assam; there are a large number of them, and you seem to be very optimistic: is it your idea that these should be developed purely by Government help ?—*A.* In the case of larger industries Government help might be necessary, but for small industries Government help is not necessary. Cottage industries require the help of the co-operative movement.

Q. Don't you think that when you have your Department of Industries they can perhaps do a very great deal to help the cottage industries ?—*A.* No, I do not think so. The Department of Industries would look to the interests of larger industries and not of cottage industries and small industries. These might be left to the people.

Q. If they are left to the people, will they not be in danger of dying out as they are now ?—*A.* No. If Government takes interest in these things, if they appoint a board of directors to control and look after these things, and if this board periodically inspect what is going on in these things, then that might be enough. The head of the district, the Deputy Commissioner, may manage all these things.

Q. You are afraid that the Board of Industries would not spare enough time to look after the small industries; supposing that they had power to appoint a special sub-committee in each district, would that not be a suitable arrangement ?—*A.* Yes, that would be suitable.

Q. Then further on in your note you give a typical complaint about the hardships suffered by the agricultural class; is that a common sort of complaint in this part of the country ?—*A.* Yes, it is a common complaint.

Q. That is, that a man gets a plot of land and improves it and when the re-settlement comes the rent is increased so much that he perhaps cannot afford to pay; do you think that is a common experience ?—*A.* Yes, that is a common experience here. I experienced this sort of complaint also in the Central Provinces.

Q. Have you any remedy to suggest ?—*A.* Yes, I have suggested one remedy.

Q. I do not quite follow it ?—*A.* Enhanced rent might be charged from the man who next occupies it.

Q. That won't help the poor man who is thrown out ?—*A.* No, his heirs will go on enjoying the land at the same rate of rent as his predecessors were paying. When he transfers that land to another person who is not in the same line with his ancestors, then Government might enhance the rent.*

Q. You recommend night schools for the labouring classes. Do you think that is practicable in Assam for instance ?—*A.* It is not yet practicable. We have started one night school at Silchar and this is working in good order, but we have been following the traditional methods of instruction, teaching them a little dictation, a little arithmetic and all these things.

Q. So this is a school for children only and not for the labourers themselves ?—*A.* No. There are only three or four labourers, the rest are mostly boys.

Q. That is simply an elementary school ?—*A.* Yes, for teaching, reading, writing, arithmetic and all these things. But it should be organized entirely on a different plan.

Q. Do I understand you to say that the Department of Industries should be entirely separate from that of Education ?—*A.* Yes.

Q. And industrial schools and technical schools should be under the Department of Industries ?—*A.* Yes.

Q. You say in your note that the "Provincial Government should engage the services of the following experts:—(1) a Chemist, (2) a Mechanical Engineer, (3) a

* *Vide* Supplementary Note II.

Botanist knowing forestry, (4) an Agriculturist knowing entomology, (5) a Bachelor of Commerce of the Birmingham or Manchester University, (6) a certificated Auditor of Accounts". Could a comparatively small administration like Assam afford to keep all these experts in its permanent service?—*A.* That is a very difficult question to answer, because it means finance; I do not mean to say that you should strictly adhere to what I have said here, but this is my idea, and if we cannot engage all these men at once, we might make a small beginning with one or two knowing a little of commerce and industry.

Q. Then you say that you would have a Director of Industries and then you would have as Assistant Director of Industries, a chemist from England or Russia with a big laboratory: why would you have a man from Russia specially?—*A.* Russian chemists are expert in agriculture.

Q. Then as sub-branches again you would have six headings, one of which should be commerce under an Inspector of Commerce: what do you mean by an Inspector of Commerce?—*A.* He will help those who carry on trade with instruction and advice. He will go from place to place and help people who are in need of instruction and information.

Q. And you say that he should be a graduate of Manchester Commercial College: do you know the Manchester Commercial College?—*A.* I have read something about it.

Q. You have no personal knowledge?—*A.* I have no personal knowledge.

Q. In your note you refer to the high royalties charged for timber: are they higher in Assam than in any other part of the country?—*A.* I have not compared them, but in Assam the people who deal in these things have always complained of high royalty.

Q. Do you know of any specific instance yourself where business is interfered with by the high rate of royalty?—*A.* Business is not interfered with by the high rate, they carry on business but if the royalty be lowered then more men might come in and the trade might be carried on on a larger scale.

Q. What is the duty on lac to which you refer?—*A.* A duty is levied on lac, but what is the exact rate of duty I do not know. It is a sort of royalty.

Q. Is that royalty charged and collected on lac which grows on trees in the Government forests?—*A.* Yes.

Q. Is there much lac in Assam?—*A.* Yes.

Q. Then you give various instances of things which you have yourself tried, like fruit gardening, scent making, etc. Have you tried any of these at all on a commercial scale?—*A.* Not on a commercial scale but on a small scale, it might be said on a more or less industrial scale. Those to whom I have taught all these things, I mean the teachers who have gone into the villages, have made fruit gardens and sold the produce in the market, and got something out of it.

Q. Have any villagers, whom they instructed, shown any signs of taking that up?—*A.* Yes.

Mr. C. E. Low—*Q.* In reply to Sir Francis Stewart you said that in the Central Provinces enhanced assessments are imposed on inprovements. Have you any instances?—*A.* Yes, I had been deputed by Sir Bamfylde Fuller to study the conditions of primary education in the Central Provinces. I had been at Jubbulpore for four months and also to Nagpur, and I went into the villages; there I talked with all sorts of men about various things, and I heard this complaint.

Q. That is a very curious thing. I have been in charge of three districts in Central Provinces and the rule there is that no enhancement on any improvement is to be imposed until the lapse of one settlement period, which is about 20 years: the man makes his improvement, the next settlement comes his rent is not enhanced; when the final settlement comes 20 years later, then it is enhanced; that is to say, he may get exemption for two settlement periods, and not less in any case than one?—*A.* That might be the rule, but they always complain that the patwaris who are responsible for these things put enhanced assessments on improvements.

Q. But the patwaris have nothing to do with land improvements any more than anybody else?—*A.* Nothing whatever.

Q. I do not quite understand how you say that improvements are subject to enhanced assessment. Sir Bamfylde Fuller himself was the author of that rule?—*A.* I did not cross-examine my informants with regard to these things, but that was the complaint.

Q. What do you do here in the way of industrial education in Assam?—*A.* I do nothing in the way of industrial education.

Q. Can you briefly mention what is done in Assam within your knowledge?—*A.* There are some agricultural farms here and they are demonstrating improved agriculture.

Q. Is any industrial education given in the ordinary sense of education?—*A.* No, nothing is done in the way of industrial schools.

Q. Are there no missionary industrial schools?—*A.* There are one or two in the hills, but we do not know anything about these.

Q. Speaking of industrial exhibitions you say "The Secretary of the Department of Commerce and Industry in consultation with the provincial Directors of Industries might

arrange for these exhibitions": Do you mean the Department of Commerce and Industry of the Government of India?—*A.* Yes.

Q. Then he will presumably have to visit the provinces in order to do this?—*A.* He need not visit the provinces, he might communicate with the provincial heads of departments.

Q. But he would not know what is the progress of any particular industry. Do you think he will be able to give any particular assistance?—*A.* For instance here in this province there might be one exhibition for the silk industry, and also sugarcane, *gur*, molasses and all these things.

Q. Do you think the Secretary of the Department of Commerce and Industry will have time to do this?—*A.* He need not tour over the provinces, he may communicate his views to the provincial heads, and they will arrange the exhibitions.

Q. Don't you think it would be better if you had a separate Department for Industries?—*A.* That might be expensive for the present.

Q. Do you think the existing Department of Commerce and Industry has got time to do things like this? Perhaps you are not in a position to say?—*A.* I am not in a position to say.

Q. Then it is only an *ad interim* arrangement that you propose, is it so?—*A.* Yes.

Q. You speak about the purchase of stores by Government; supposing you had an industrial department in the different provinces, and stores were purchased locally as far as possible, and only those stores were imported that could not be bought in India, do you think that would be a suitable procedure? That is what the Munitions Board are doing at present.—*A.* That is my idea, but more attention should be paid to these things so that locally made articles might be purchased on a larger scale.

Q. That is what the Munitions Board are doing: they have Provincial Controllers and all indents from Government departments pass through their hands, and everything made locally is removed from the indent and obtained in India: that is what they are doing now?—*A.* That is far better.

Mr. A. Chatterton.—*Q.* Your remedy for the evils from which the cottage industries are suffering at the present time is to appoint sub-committees in different districts: this is what you explained to Sir Francis Stewart: at any rate that is your view in the matter. Now where are you going to get people to serve on these sub-committees, people who have got the necessary knowledge to do useful work?—*A.* We cannot now get men with the necessary knowledge to do all these things, but if the sub-committees are established, they will be compelled to acquire the necessary knowledge and they will make themselves better men in order to take part in all these things; that will be a kind of training to our men.

Q. You hope it will: have you any experience of any place where such committees have been formed?—*A.* No, they have not been formed.

Q. Have such committees been formed in other provinces?—*A.* I have not seen.

Q. You strongly advocate the establishment of night schools.—*A.* Yes.

Q. And you say that little boys are going to the night schools: why don't they go to day schools?—*A.* They work in the fields during the day time.

Q. But they don't work the whole day?—*A.* They work during the greater part of the day and then they take rest.

Q. Don't you think it will spoil their eyes to try to learn reading and writing at nights?—*A.* They don't mind that; they take to these things very gladly.

Q. You have got some remarks here about the Indian Science Congress which you say has not done anything tangible to justify its existence. Do you mean that the Congress itself has not done anything or the men belonging to the Congress?—*A.* The Congress means the men.

Q. So you have come to the opinion that they have not justified their existence so far?—*A.* It is still an infant institution.

Q. You have no definite information on the subject?—*A.* No.

Q. Would it not be better not to criticize things that you know nothing about?—*A.* I have given my opinion so far as I know.

Q. Speaking about the question of railway freights, you say that tea is exported at considerably lower rates than other agricultural products: is that correct? What is the rate charged for tea?—*A.* I do not know the rates but that is the everyday complaint.

Q. Who makes this complaint?—*A.* It is made in the papers.

Q. In what paper?—*A.* I cannot say in what paper, but in some of the lectures delivered at the industrial exhibitions they have also said so.

Q. Which industrial exhibition?—*A.* I believe this was also mentioned by Maharaja Sir Manindra Chandra Nandi at the last industrial exhibition held in connection with the Indian National Congress at Calcutta.

Q. I would like if possible to get some evidence on the particular point, is it the fact that tea has been exported at lower rates than agricultural products?—*A.* If you like, when I go back to Silchar I may collect better information and statistics in regard to this thing.

Q. I think it would be better to substantiate a statement of this kind ?—*A.* Here I have got no statistics with me to support my statement, but it is a fact so far as I know. If you like I may send you detailed information.*

Hon'ble Lt.-Col. P. R. T. Gurdon.—*Q.* In your exhaustive note, you criticize the land-policy. Is this the land policy of the Assam Administration? I think you mentioned that of the Central Provinces as well. Where have the settlement operations that you refer to been carried out?—*A.* This also applies to Assam.

Q. In which district have they operated harshly?—*A.* I heard this complaint in Cachar.

Q. You heard this complaint in Cachar with regard to the Cachar re-settlement, I suppose?—*A.* Yes.

Q. What was the complaint? Was it that the land has been assessed too high?—*A.* Yes.

Q. What sort of land? For what particular class of agriculture?—*A.* Paddy lands.

Q. What is the percentage of the increase of revenue?—*A.* 28 per cent this year, I believe, if I remember right.

Q. Twenty-eight per cent over the last assessment, do you consider that too high?—*A.* I myself might not consider that too high, but that is the complaint.

Q. Not more than 28 per cent?—*A.* Not more than 28 per cent, I think.

Q. With regard to your views as to who should be Director of Industries, I understand that you are in favour of encouraging cottage industries: you say that the Director of Industries should be a business man and not an expert official?—*A.* Yes.

Q. Would a business man without a knowledge of the province and of the languages of the province be able to make the people understand?—*A.* By a business man I do not mean to say that he must not have a knowledge of the province and a knowledge of the language.

Q. You mean he must be a business man of the province?—*A.* Yes.

Q. Not outside the province?—*A.* No.

Hon'ble Sir R. N. Mookerjee.—*Q.* Is there such a man available here?—*A.* Not available now, but if you import a business man from Europe or from America, and then if he stays here for some time, if he is an intelligent man he will in a year or two pick up the language and all the special circumstances of the province.

Q. What would you pay for a man from Europe?—*A.* Say, Rs. 3,000 a month.

Hon'ble Lt.-Col. P. R. T. Gurdon.—*Q.* Would you bar an official altogether?—*A.* No.

Q. Supposing it would not be possible to appoint such a highly paid officer, would you bar an official with experience of the province?—*A.* No, I do not like to bar. Rather as I have said, I would recommend one I. C. S. man. I. C. S. men get an all-round education, they are therefore better men.

Q. Are they expert in the languages of the province?—*A.* They become expert very soon. In a year or two they become experts. I have seen many who can speak Bengalee and Assamese thoroughly well like any Bengalee or Assamese gentleman.

Q. In your note regarding the Forest Department, you speak about high royalty. Can you refer to any particular cases in which the royalty is too high?—*A.* I cannot mention any particular case, but that high royalty is charged on all sorts of timber is the general complaint.

Q. Cannot you mention any particular species of timber?—*A.* Say *nahor* trees.

Q. How much is the royalty on *nahor* trees now?—*A.* I cannot give the exact figure.

Q. Do you think that is too high, whatever the rate?—*A.* Yes.

Q. Is the royalty on *sal* too high?—*A.* No, not so much as it is on *nahor*.

Q. What you object to is the royalty on timber from which furniture is made, that is *chám*?—*A.* The royalty on *chám* is high.

Q. Do you think it is too high?—*A.* It is, because within the last few years the price of furniture has doubled.

Q. Do you think the royalty is too high on *sal* wood?—*A.* Yes.

Q. What about the royalty on timber from which boats are made?—*A.* There the royalty is not very high.

Q. You have no complaint to make about this?—*A.* No.

Q. What is the name of the timber used for boats?—*A.* It is classified as *ajar*; it is a fairly common tree in Assam.

Q. What about royalty on timber used for tea boxes?—*A.* Tea boxes are made of *simul* wood. The royalty is not very high on timber for tea boxes.

Q. Have you any complaints to make about the arrangements made for the royalty on timber for tea boxes? What are the concessions granted to firms on tea boxes?—*A.* *Simul* trees which are sold to firms to make tea boxes are sold at a far lower rate than they are sold in the market for people who do not manufacture tea boxes.

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* *Vide* Supplimentary note I.

Q. Do you think that other people ought to take part in the same concession ?—*A.* Yes.

Q. Do you think an undue preference is given ?—*A.* Yes.

Mr. C. E. Low.—*Q.* Supposing the same rate were given to people who do not make tea boxes, do you think they would take up more *simul* wood ?—*A.* Yes for other purposes.

Hon'ble Lt.-Col. P. T. R. Gurdon.—*Q.* You said that the duty on lac should be withdrawn ; but the duty on lac has been withdrawn ; I hear that they have passed orders to that effect ?—*A.* I do not know. I thank you for this information.

Q. But I am not quite certain, I will tell you on Monday.* You think that the duty operates harshly then ?—*A.* Yes.

Q. Is there much business done in lac in your district ?—*A.* Yes in Sylhet and Cachar on the other side of this Valley.

Q. You say that Government should also consider whether more liberal rules should not be framed in respect of grazing. What do you mean by more liberal rules ?—*A.* If I remember rightly, they charge Rs. 10 a year for every buffalo for grazing.

Q. Is that in the Surma Valley ?—*A.* No, in the Assam Valley.

Q. Would you be surprised to hear that the rate is only Rs. 3.—*A.* Yes, I remember now it might be Rs. 3 per buffalo, and it might be reduced a little.

Hon'ble Sir R. N. Mookerjee.—*Q.* You wanted the Rs. 10 rate to be reduced, and you now want the Rs. 3 rate to be still reduced ?—*A.* When I was passing through Lumding one man was showing me one receipt and that receipt contained Rs. 10 ; I enquired whether he was paying Rs. 10 for one buffalo and he said yes, if I remember right.

Q. This statement of yours will be published, it will go everywhere, it will go to the Government of India, it will go to the Secretary of State ; do you think it is fair to make such a statement without ascertaining these facts ? You yourself don't know that the duty is very high ?—*A.* The written statement was submitted to you last year. You come after a year, so I forget the figures—you did not tell me on what points you would examine me. In that case I would come prepared with the figures. People complain that the duty is very high. What I say is that Government might be a little more liberal with regard to these things.†

Mr. A. Chatterton.—*Q.* I suppose you want a subsistence allowance from Government for keeping buffaloes ?—*A.* People expect to get all sorts of concessions from Government.

Hon'ble Lt.-Col. P. R. T. Gurdon. Q.—Buffaloes are grazed in the Government forests, is that not so ?—*A.* Yes.

Q. Regarding fruit gardening, you say 'pine-apple is another grown abundantly' : Have you grown pine apples yourself ?—*A.* Yes.

Q. How much cultivation have you got, how many acres ?—*A.* I only tried half a bigha for the sake of experiment, and it was successful.

Q. Can you refer to any growers of pine-apples on a big scale in the Silchar district ? Have you seen Mr. Laurie's cultivation ?—*A.* No, I have not seen.

Q. Have you seen anybody's cultivation ?—*A.* I have seen some cultivation on both sides of the railway, but I do not know whom they belong to.

Q. Then you have no personal experience except with regard to your small cultivation ?—*A.* No.

Q. You cannot say as to whether there is a prospect of a canning industry being successful ?—*A.* It may be successful.

Supplementary note to the oral evidence of Rai Sahib Aghor Nath Adhikari, Superintendent, Normal School, Silchar (Assam).

I.

Railway and Steamer freigl

In my written evidence, I stated that freight on tea is comparatively lower than that on other agricultural products of the province. I was directed by the President to submit a note in support of this statement. The following note will, I believe, support my statement :

The railway freight on tea from Gauhati to Calcutta, all the year round, is annas 15 per maund while that on jute is annas 10 per maund from January to June and annas 14-5 from July to December. The price of a maund of tea at the lowest rate is Rs. 30 while that of a maund of jute is Rs. 10 at the highest. But the railway freight per maund is annas 15 on tea and annas 14-5 on jute—a difference of 7 pies only.

* Note—The duty on lac has been withdrawn.

† *Vide* Supplementary Note III.

This is not all. With regard to tea, the railway freight is charged on the net weight of tea, provided a copy of the garden invoice is attached to the railway invoice. I quote below figures from a garden invoice to show that 20 to 25 per cent of the total weight is carried free of charge.

192 chests of tea were sent from a garden. The garden invoice contained two figures—net 17,720 lbs. and gross 22,712 lbs. The goods clerk charged railway freight on 17,720 lbs.; so he neglected the weight of about 5,000 lbs. *i.e.*, the weight of the packing boxes, which the railway company carries free.

The freight on tea therefore is practically lower than that on jute—weight for weight.

Again railway demurrage rules are more liberal for tea than those for other articles of commerce.

Steamer freight per maund from Gauhati to Calcutta is annas 11 on tea, annas 8-6 on jute, annas 10-6 on cane. Tea is thus carried practically at the same rate with jute and cane, the difference in freight being very small.

I do not recommend that this concession on tea should be withdrawn but what I mean to say is this—that similar concession may be extended to other agricultural products of the country.

In support of my statement I beg to quote a few lines from the speech of Maharaja Sir Manindra Chandra Nandi as Chairman of the Reception Committee at the last Industrial Conference in Calcutta: "In the matter of carrying goods, the impression appears to have gone deep in the Indian mind that Indian products are refused the same facilities by railway and shipping authorities all over the country which are easily extended to enterprises under European management. It is evident that so long as the company system of railway management is allowed to be continued, European enterprises will receive preference to purely Indian concerns."

I have suggested a remedy in my written evidence.

II.

Land policy.

There was some discussion on re-assessment. The following supplementary note will suggest what I mean:

It is admitted on all hands that the Government in order to carry on its work has to meet certain expenditure and that expenditure must be contributed by the people themselves. So the Government is entitled to take certain share of the profit which the people derive from the land. The grain rate is commuted into money rate. This rate is not fixed except in the permanently-settled portion of the country but it is enhanced with repeated and periodical settlements time after time. The enhancement is, as far as I know, dependent on the improvement of the land effected by the people after the first settlement. As the improvement is effected by the people and the Government has nothing to do with it, the people should, in my opinion, be allowed to enjoy exclusively the fruits of their labour and exertion. India is an agricultural country and its economical advancement depends mainly on the growth of this Industry. If the people be not under the certainty that no demand would be made on them or their heirs in consequence of the improvement of the land, they will not invest capital or effectively put forth their strength for the improvement of the land. At the same time we find that where the duration of the settlement has been the longest the effects of famine has been the least but where it has been the shortest the effect has been the most disastrous; I think that there should be some fixity in the duration of enhancement of revenue. I therefore propose that the revenue should remain fixed and unaltered as long as the lands are in the use and occupation of the settlement holders and their heirs, but the lands shall be liable to enhancement of revenue on alienation according to the capacity of the land at the time, as the Baksha lands in Cachar are liable to assessment of revenue at full rates on alienation. Every proprietor or landholder succeeding to any state or share in an estate by transfer and obtaining possession of the same, is bound to apply within six months from the date of taking possession thereof to the Deputy Commissioner of the district, on the General Register of which the estate is borne, for registration of his name as such proprietor or landholder (*vide* Section 50 A. L. R. R.) so the Deputy Commissioner is likely to get information of every transfer. And this transfer is so very frequent, that there will be no loss in Government revenue.

III.

Grazing-tax.

There was difference of opinion regarding grazing-tax. The following note may clear the point:

The tax on buffalo has risen from Re. 1 to Rs. 3 and Rs. 4 during the last three years. This has to some extent frightened the Nepalese buffalo-keepers who tend their herds on the hills and near the forests. The dairy concerns depend for their produce mostly on these Nepalese settlers. This rapid enhancement in tax from Re. 1 to Rs. 4 may tell upon the trade in butter and *ghee*—which are, in a vegetaranian country like India, the only animal food for the poor and the rich alike. I therefore proposed in my written statement that more lberal rules should be framed in respect of grazing.

WITNESS No. 397.

Rai Bistoram Baruah, Bahadur, Tea Planter, Jorhat.

WRITTEN EVIDENCE.

I.—Financial aid to Industrial Enterprises.

1. I had to borrow money for the tea industry from Marwari merchants and villagers. Though I was an influential man and a tea planter I had much difficulty in raising loans. These difficulties may be removed by opening co-operative credit societies and grant of Government aid. Capital.

Q. 2. Marwari merchants and a few local men are the sources from which capital is principally drawn.

Q. 3. I do not know of any such enterprise.

Q. 4. I am not aware of any financial aid by Government to industrial enterprises. Government aid.

Q. 5. All the eight methods of Government aid are, in my opinion, good. The surrounding circumstances and the nature of each industry will determine which method of aid will be beneficial to it.

Q. 6. There should be Government control of the enterprise where Government subscribes to the share capital. There should be a Government director until the enterprise becomes self-supporting. The powers of such director will be as given by the rules of the concern. The Government director may be retained, if the shareholders so desire, even after it becomes self-supporting.

Q. 9. The people of this country cannot carry on, for want of funds, any business on a large scale. The villagers who produce mustard, pulses, jute, paddy, sugarcane, do not earn any profit as the Marwari merchants who lend them money at an interest rising from 2 per cent to 5 per cent per mensem are enriched by them. Financing agencies

Q. 10. New co-operative credit societies should be opened. The Government would grant loans to these societies from ₹5,000 to ₹10,000 without interest; and these loans will be repayable after 10 yeats. The banks and financial agents of Calcutta are unwilling to lend money to the people of this province as they do not know the people and their enterprises. To facilitate grants of loans by outsiders to the industrial enterprises official information bureaux should be created. Co-operative Societies.

Q. 10A. There should be a banking law.

Q. 11. I do not know whether any industry has been developed or assisted by the formation of co-operative societies. Co-operative Societies.

Q. 12. The co-operative societies should be encouraged to aid the production of paddy, sugarcane, mustard, pulses, jute, betelnut and cloth. The organization and special objects of these societies will depend on the nature of the industry and its environments.

Q. 12A. Trade Guilds such as exist in other countries may be of immense service for industrial development.

III.—Assistance in marketing products.

Q. 31. Industrial exhibitions are of immense value in creating a healthy competition in production of good articles and markets for sale of industrial products. Exhibitions.

Q. 32. Government should encourage industrial exhibitions.

Q. 33. They should be both popular in character and attractive to the sellers and buyers.

Q. 37. The principal Government departments which use imported articles should publish list of those articles; and should exhibit them in Commercial museums. Government patronage.

IV.—Other forms of Government aid.

Q. 41. Government should give facilities to the local people to acquire waste land for industrial development. The restrictions now imposed on the local people applying for waste land should be removed. Land policy.

Q. 42. Government should give concessions of land free of rent for the establishment of new or the development of existing industries till they become self-supporting.

(Witness did not give oral evidence.)

WITNESS No. 398.

MR. N. O. Peters, I.S.O., *Manager, Jorhat Railway, Jorhat.*

WRITTEN EVIDENCE.

I.—Financial Aid to Industries.

Capital.

Q. 1 to 8. I have had no experience in raising capital for any enterprise, nor are my opinions sufficiently definite to be expressed.

Government assistance.

Q. 6. State assistance should be given by Government technical experts, and a Government Audit Department must be instituted to safeguard the interests of the Indian capitalists which may induce them to put out their money.

Co-operative Societies.

Q. 11. I don't know of any industries which have been developed by Co-operative Societies in this Province.

Q. 12. Co-operative Societies should be encouraged and subsidized in cottage industries, as weaving, sericulture, cane and bamboo furniture.

Q. 12*a*. I have no suggestions to make for developing trade with other countries, as conditions of Indians are so very different from the people of Europe, Japan and China.

Limitations to Government aid.

Q. 13. No State aid should be given to any new enterprise to compete against existing institutions.

Q. 14. No State aid should be given to new enterprises but a protective tariff be introduced, which should not be higher than the sea freight from the country of export. Government aid might be considered when the exporting countries are being subsidized by their Governments.

II.—Technical Aid to Industries.

Conditions under which expert assistance should be given.

Q. 17. The loan of services of Government experts when deputed for research work to private enterprise, depends on the conditions. If his services are entirely placed at their disposal the said concern should bear the expenditure of his pay and allowances, but if the Government expert has to give the results of his researches to several enterprises, in this case, the share of payments towards the salary, etc., should be borne by these concerns in proportion to their capital.

Publication of results of research.

Q. 18. The results of research work should not be published when one firm has borne the charges of the expert, the same ruling for the others who have jointly borne the charges, and not be public property.

Demonstration factories.

Q. 19. State demonstration factories should be adopted for sericulture, glass and pottery works, hand weaving, and spinning, canning of fruits, curing of fish, both sea and fresh.

Q. 20. Yes.

Industrial surveys.

Q. 25. Further detailed surveys should be supplemented with as much technical information and guidance possible. 1st, Agricultural nature of soil, what cereals and fruit would best grow and thrive. 2nd, Forest produce, the quality and quantity of the different timber and grasses, facilities in roads, railways and waterways also conditions of local labour. 3rd, Minerals and oils; we have very few geologists in India at present to exploit the mineral wealth which is vast, especially in the province of Assam. Geological surveys conducted for commercial objects, would bring in its train several new flourishing industries.

Q. 27. The results should be published in all the leading English and Vernacular papers.

Consulting Engineers.

Q. 27*a*. I do not consider the appointing of consulting Engineers, or supplying of plans and estimates to be of sufficient value to industrial enterprises to private firms, or individuals, to justify the expense of maintaining the same. In my opinion the firms and individuals already engaged in Industrial enterprise are capable of running and improving their own business without such help, and any fresh industry could not be on a large enough scale to require such superintendence, I speak of Assam alone. I do not know enough of other parts of India to form an opinion.

III.—Assistance in Marketing Products.

Commercial Museums.

Q. 28 and 29. I have not sufficient knowledge of commercial museums to express an opinion.

Sales agencies and exhibitions.

Q. 30. The only sale products that have come under my notice are Assam silks, Manipuri, Abor and Naga cloths, brass ware, and curios worked in ivory and mithun horns. I consider these might all be developed by a system of organized sales agency and industrial exhibitions, and the nature of such exhibitions should be popular. They should aim at the importance to the Assamese of developing every industrial possibility as opposed to the merely scholastic. In my opinion, I think in that of any labour controller, the present-day Assamese is neglecting educational for the scholastic, a state of things bound to bring disappointment

to many, who are unable to pass examinations or having passed them to obtain Government appointments and are thrown back on their parents for support, having no trade or the inclination to learn any. This makes for dissatisfaction for the very schools they were so eager to attend, and ruins many a youth who if apprenticed to his father's trade, would have been a useful artisan.

Q. 30*a*. No, I don't consider it would be advantageous.

Q. 31 to 33. My opinion of the value of Industrial Exhibitions are that they open out new ideas for the artisan and would give impetus to cottage industries and encourage them to turn out the best they are capable of especially if Government would recognize by giving them rewards. The nature of these exhibitions should be 1st Agricultural produce, 2nd Cottage Industries, 3rd Labour saving machines for Agriculture with Demonstrations, 4th cattle, pony, sheep, goat and poultry, exhibits; the exhibitions should be popular in character and run more on lines of the Indian Fairs which would bring sellers and buyers in contact; these exhibitions should be held every year in each District; the Local Boards should appropriate funds and in large towns the Municipalities should also provide funds.

Q. 34 to 36. Government financial help should not be given to trade representatives, the commercial enterprise of each firm should themselves send their agents to Great Britain, the Colonies, and Foreign Countries, the same as Japan is doing. Trade representatives.

Q. 36. The same opinion as for sending Agents.

Q. 37. Yes, Government Departments using imported articles should publish a list of the same in the daily English and Vernacular papers. Government patronage.

Q. 38. The purchase of Government stores provided they have been tested by experts and from reputed firms should as far as practicable be purchased to encourage Indian Industries.

Q. 39. Co-operative credit banks are now run by Government on a small scale, the chief difficulty lies in not being able to run it on a larger scale on account of the Indian agriculturist not being a person with any capital and their holdings being insignificant, money advanced to them being risky, consequently small loans would only help them in a small way, this is one of the reasons why the Indian *banias* charge such exhorbitant rates of interest. This is one of India's hardest problems to be solved. Co-operation.

IV.—Other forms of Government assistance.

Q. 40. The conditions for the supply of Government owned raw forest materials for manufacture of *bonâ fide* Industrial institutions, should at the first start of a factory be half the usual royalty, and when the industry has got to a profitable basis and paying the interest on the capital, the royalty should revert back to the original royalty charged. No monopoly should be granted for this particular forest produce for which that concession has been granted. Supply of Government owned materials.

Q. 41. There is no check that I am aware of that is being imposed on industrial development. Land policy.

Q. 42. Government should give land for the establishment of new, and to the development of existing industries, as far as possible, on the present valuation of land, as the country is opened out and communications are improving in this province.

V.—Training of Labour and Supervision.

Q. 44. (*a*) Primary education in their respective vernaculars would help them but the lack of it does not hinder industrial development. Lack of primary education.

(*b*) I have found the best means to improve the labourers efficiency and skill is to give a small but regular annual increase to the ones who have shown improvement both in their efficiency and outturn.

Q. 45(*a*) *and* (*b*). I have found and adopted as the best policy is to be in close touch with all the men and improve their positions by strict discipline, and start training them from the ages of 12 to 14 years in the following trades, *i.e.*, fitter, turner, blacksmith, rivetter, moulder, carpenter. If they are put to learn 2 or 3 different trades, they are never efficient or skilled in any. Methods of improving efficiency of labour.

Q. 46. I have had experience for the past 30 years in training Indian apprentices in Railway Workshops.

Q. 47. No experience in industrial schools.

Q. 48. The boys to be trained for one of the branches in mechanical works, should be recruited between 12-14 years and placed on trial for 3 months, if the boy does not show himself able to grasp the work intelligently, or is inclined to be lazy, he should be dispensed with, as he will never turn out efficient or a hardworking artisan.

Q. 49. I have no experience of day schools for short time employees and I don't recommend the course. I have in my workshops lads training as carpenters, blacksmiths and fitters and they are taught mechanical drawing for 2 hours daily.

Q. 50. Industrial and technical schools and commercial colleges should be under the control of the Director of Industries of the province. Control of industrial schools

Training of supervisors and managers.

Q. 51. The training and improvement of supervisors would be to give them an advanced education in the vernacular only, they should be brought up to the standard corresponding with the 3rd or 4th class of Government High School, a good knowledge of drawings, also a course of practical Geometry, is necessary. I find that boys in Assam as soon as they have a little knowledge of English, regard any practical manual work, as derogatory, though they may belong to the labouring classes, those training for supervisors should at least serve an apprenticeship of 5 years and another 3 to 4 years as journeymen before they are made supervisors in their respective technical trades.

The training of managers.

They should pass the matriculation or the senior Cambridge, and should be indentured for 5 years in one of the technical institutions which they have elected for, their studies to be kept up by night schools in which drawing and commercial morality should be taught so as to make good business men.

Q. 52. I don't recommend that Government should give any monetary assistance to supervisors or managers of private concerns, to study conditions and methods in other countries.

Q. 53. By Government appointing men, who are in training in the different technical institutions as managers, and carefully selecting the right man by a board comparing his past records.

Iechanical Engineers.

Q. 54. There should be an uniformity in the standard of examinations for mechanical Engineers of the various provinces, so that Local Governments will reciprocate by recognizing each others certificates.

Q. 55. The law in Assam does recognize the Prime Movers Act, I have no criticism or suggestion to make.

VI.—Official Organization.

Q. 56. None that I am aware of.

Q. 57 and 58. There should be a Board of Industries with advising committee and to be composed of at least two technical experts.

Q. 59. I do not recommend a Board with powers.

Q. 60. Yes, a Director of Industries should be appointed for each province. He should be a thorough practical technical specialist. He should possess qualifications, of experience in technical concerns, in the matters of machinery.

Q. 61 and 62. The relations between the Director of Industries, Board of Industries and the Provincial Government is that the proceedings of the Board, with the recommendation of the Director of Industries, be submitted to Government for sanction and allotment of funds, if practical to form an Imperial Department under one head to be designated Director-General of Technical Industries. The Governor of each province should have full powers to carry out projects.

Cottage industries.

Q. 62*a*. As an experimental enterprise the members of the Local Boards should of each district be asked to organize a policy for cottage industries.

Q. 62(*b*) *and* (*c*). Each member of a circle should represent to the chairman what cottage industries are about his villages, and which he recommends to be fostered: the latter should then get the opinion of the Director of Industries of the Province.

VII.—Scientific and Technical Departments.

Q. 63. Yes, there is the Scientific Department of the tea Industry at Toklai which may be capable of giving assistance to industries. I have no further criticism or recommendations to offer.

Q. 64. I recommend the institution of an Imperial and Scientific Department in each province, 1st Agriculture, 2nd Mineral, 3rd Forest products for manufacture, 4th Textile industry and machinery.

Head of imperial department.

Q. 65. Under a Director-General of Industry and be under an agreement of 5 years and be recruited from one of the Technical works of Great Britain.

Q. 66. He should have powers of control on the Directors of Industries of provinces, take up questions referred to him, his relations to the Imperial Government should be same as the Director-General of Posts and Telegraphs.

Seconding of experts to provincial departments.

Q. 67. When the services of an expert is loaned by the Imperial Department to a Local Government, he should follow out the researches and investigate projects requested by the Local Government, and be attached and under the orders of the Director of Industries of the Local Government, his pay and allowances to be met by the Local Government.

Q. 68. Local Governments should engage their own experts on subjects when they are obtainable in India, and have the necessary qualifications to be under the orders of Director of Industries and to carry out the orders of the Head of a District where special enquiries as to new industries are to be opened, or on already existing industries.

Q. 69. Under the Director of Industries of the province that they are attached.

Q. 70. On a 5 years' agreement and be recruited in Great Britain.

Q. 71. and 71*a*. The Technological research institutions should be allowed to develop as independent units, according to the needs of the Province. Technological institutes.

Q. 72. Each should deal with a limited group of related subjects.

Q. 73. Yes, they should be under Government control of the Director of Industries of the province.

Q. 77. The State should bear the cost for Government experts who are sent to study conditions and methods in other countries. Study abroad.

Q. 78. I have had no difficulties in consulting technical and scientific works of reference. Reference libraries.

Q. 79. Yes, I think technical libraries are very essential and should if possible be instituted in every Head Quarter station of a district.

Q. 80. Yes, a College of Commerce and Industry is necessary for every province. It should be organized to be run on nothing but the exchange and treatment of commerce and banking knowledge. College of Commerce.

Q. 81. It would train a class of men who would organize industries, who have hitherto aspired to clerkships.

Q. 81*a*. Municipal and Local Members should have sittings on their boards monthly to investigate and decide what resources of their district could be exploited for technical industries and allotment of funds towards the technical and scientific Departments of their province, and towards annual Industrial Exhibitions. Local Bodies.

VIII.—Commercial Intelligence, etc.

Q. 82 and 83. No criticism to offer and suggest no changes.

Q. 84. I have gained no advantage in the issue of the Indian Trade Journals. Trade Journals.

Q. 85 and 86. I see no need for establishing or assisting an exclusive trade journal, but all matters which would help the different trades and industries should be published in the daily English and vernacular papers which will be more widely read.

Q. 87. I am unable to pass an opinion.

Q. 88. The Director of Industries of each province should ask the District Officer of each District which he controls, to collect information through Sub-Divisional Officers, and officers of the Public Works Department.

IX.—General.

Q. 89. I don't think that Government certificates of quality could be established in the general sense, to be really of any service, but a few items could be treated as voluntary, paints, varnishes, oils, iron, steel and cement. Certificates of quality.

Q. 90. The lists should be made in a central laboratory, and certificates granted accordingly by the Director of Industries of the province.

Q. 91 and 92. I am unable to give the names of materials for manufactured or unmanufactured goods, as no law passed will be able to cope with and prevent adulteration by unprincipled agents. Adulteration.

Q. 93. Yes, when firms or individuals are found misdescribing their goods, a heavy penalty should be imposed and if continued their firms should be closed. Misdescription.

Q. 96. No, it is not desirable to introduce a system of Registration. Registration of partnerships.

Q. 97. This province has need of Light Railways which would open out areas where the industries of iron, ore, coal and lime, etc., would open out and develop the country, and would greatly help the present tea industry for the conveyance of their stores and teas either to railways or steamer ghats. Transport facilities.

Q. 98. I have no criticisms to make individually.

Q. 99. I am not aware of any Railway exclusives that are wanted to develop new or existing industries.

Q. 100. I am unable to pass an opinion.

Q. 101. No, not that I know of.

Q. 102. I don't know of any. Yes, investigation should be made.

Q. 109. No complaints to make.

Q. 111. The province of Assam must have a lot of iron, ore, coal, oil and limestone which if exploited and worked would form large industries.

Q. 112. The causes retarding the development of the industries mentioned in Q. 111 are through people not coming forward to promote companies to work them.

Q. 112*b*. Government aid to be given cultivators of repute and standing for the improvement of raw material.

(*Witness did not give oral evidence.*)

WITNESS No. 399.

LIEUTENANT-COLONEL E. P. R. GILMAN, *Representative of the Assam Branch of the Indian Tea Association, Barduar Tea Estate, Kamrup.*

WRITTEN EVIDENCE.

Q. 6.—I think all accounts should be audited by a firm of chartered accountants.

Q. 45.—If possible all apprentices should be on the English lines and should be tried for, say, 3 years, with nominal pay till proficient and able to do a fair day's work.

Q. 54.—Yes.

Q. 60.—A business man.

Q. 94.—Heavy loss.

Q. 96.—Yes, it should be on the lines now in force in England.

Q. 109.—No.

(*Witness did not give oral evidence.*)

Mr. O. A. Byrne.

WITNESS No. 400.

MR. O. A. BYRNE, *Proprietor, Tezpur Saw Mills, Tezpur.*

WRITTEN EVIDENCE.

General remarks on the Saw Mill Industry in its relation to the Forest Department.

Importance of saw mills.

My experience in Assam includes the management of some large tea concerns; from this I consider it may be assumed I possess some commercial training. I am an Engineer by profession and claim some experience in the direction and control of skilled labour. For 16 years I have been managing proprietor of my own saw mills and consider myself entitled to express opinions, regarding the industry in its relation to the Forest Department.

The saw mill, next to tea, is the most important industry, and with the greatest possibilities in the province, but it is absolutely dependent on the Forest Department for its existence.

Owing to foreign competition and timber shortage saw mills carried on a precarious business for years, until the outbreak of war. Since then the deficient supply of foreign boxes compelled users to fall back on local supplies. It is, however, uncertain, if the demand will last, in view of its doing so timely arrangements are necessary to anticipate requirements, and urge the Forest Department to improve the timber supply.

Policy of Forest Department.

Sir Archdale Earle has shown some interest in the industry, and deputed a special officer to endeavour to improve timber supplies for the mills. He was, however, transferred before completing his task, and matters have been in abeyance since. He was succeeded by an officer from Burma with divergent views, acquired in a country where all conditions are different to Assam, so that continuity of method has not been followed or previous arrangements carried out.

Sir Archdale Earle remitted for two years the crushing "royalty" tax of 33 per cent on our profits thus admitting its unfairness. It has since been reimposed at its previous excessive figure, it is believed at the instance of the Forest Department. It seems the Department is more intent on securing a slight temporary access of revenue, than in encouraging trade and industries which would eventually lead to an expansion of business benefiting both it and the province.

The few varieties of trees, we are allowed to use, possess absolutely no commercial value, are useless as fuel and are better out of the way of first class timber. Notwithstanding this we are taxed to an extent out of all proportion to the value of the material with which we are supplied. The feeling is very strong regarding this impost: all representations for a reduction have been flouted.

Some Forest officers have been helpful and sympathetic, while others, if not actually hostile, have been indifferent and lukewarm.

Constant change in the personnel of the Forest Department is inimical to progress. Each newcomer has different views to his predecessor so that constant changes upset all business procedure.

The success of present and prospective industries entirely depends on the amount of assistance accorded to them by the Forest Department which should be run on business lines by businessmen, broad-minded, with technical and commercial training, unshackled with obsolete rules and impracticable regulations.

The most is not being made of the great potentialities at the disposal of the Forest Department. Improvement in this necessitates the appointment of a Director of Industries with very full powers and the necessary qualifications.

There is even now a great demand for forest produce which after the war will doubtless be greatly enhanced, but excessive "royalty," deficient transport facilities, and obstructive regulations bar the way.

Under favourable auspices, many industries might be started, amongst others Veneer box making, for which there is an enormous demand, has been suggested by Sir Archdale Earle, but this would require considerable capital and private concerns might not care to experiment.

There are openings for match factories, paper mills, boat building, but unless the Commission can bring its influence to bear in the proper quarter none of these suggestions are likely to materialise; nothing will be done and the province will go as it has for the past 30 years.

Other forms of Government action and organization.

Forest transport.

Insufficient transport facilities necessarily greatly retard industrial development in Assam. Water transport is the cheapest and most practicable for forest produce. Unfortunately in the dry season this form of transport is impracticable. The absolute necessity for roads then arises, but none exist. Mere tracks are fitfully used and the amount of forest produce that can be extracted from the forest is negligible. The obvious remedy is roads followed by light portable tramways. The Forest Department pays no attention to this very important matter.

The removal of snags and obstructions from the rivers would greatly facilitate transport.

Policy of Forest Department.

From the point of view that the Forest Department is a commercial undertaking, the public is not satisfied that it is conducted on business lines. It does not encourage the exploitation of its resources, and puts needless obstacles in the way of would-be traders. Its "Reserves" are practically untouched, owing to harassing restrictions imposed and difficulty of extraction and transport. It would seem, as if it were preferred, to let the timber rot than use it. The following is the opinion of the Hon'ble Mr. Gilman, Forest Member, of the Board of Revenue, Madras, : (*Englishman*, 23rd July 1915)—"In my opinion the Forest Department should concentrate its energies on those forests that can be worked to advantage either for timber or fuel. Forests were not reserved merely to be looked at, and when the tree growth in a forest reaches an exploitable age, the forest ought to be worked. There can be no doubt of the fact that when forests are worked friction between the people and the Department is reduced to a minimum. Afforestation may be practised by the people in private lands, panchayat areas." One-sided agreements have been forced on the saw mills and executed under strong protest by all. These documents are mainly composed of penal clauses, restrictions, and rules, which, if strictly enforced, would close down every mill in the province in a week.

A royalty of 5 annas per foot is now levied on first class timber instead of Rs. 6 per tree as hitherto. Having regard to the absence of roads or other facilities for transport, this is an extortionate impost, and will further diminish demand. The same remarks apply to the royalty levied on tea boxes turned out by saw mills. The rules and regulations for saw mills exploiting reserve forests are framed and applied so as to nullify the concession.

The forest officer in charge of a division should be located near the head office and be reasonably accessible. He should be a trained man. At present Darrang Division is being run by an officer with no experience or technical knowledge. His office is situated 25 miles from the station, where almost all traders and timber merchants reside: this causes great inconvenience and discontent. This officer besides forest work is saddled with the duties of political work on the frontier, which occasions frequent absence. This is obviously unfair to the public, as business is more or less hung up, during his absence. Even on the pretext of expediency there is no reason for this appointment as the services of the Kamrup Forest Officer are available, or those of a trained and experienced retired gentleman, who has held charge of Darrang Division for years. Under any circumstances the present appointment is unsatisfactory and indefensible.

Concentration of special kinds of trees.

It is quite practicable to concentrate special varieties of trees in limited areas. But although there has been a good deal of talk about doing this for years, it has not got beyond that stage, and in my opinion never will, if the present system of procrastination continues. Neither afforestation nor sylviculture have been tried to any useful extent. The fact is the areas best suited for such experiments have been ostensibly acquired for "forest reserves," but in reality for "game sanctuaries." The cultivators have been expelled from these areas, and traders prohibited from operating within them. These vast areas, in the most accessible situations, contain no valuable timber to justify their absorption, whereas they contain quantities of second class timber suitable for saw mills. These areas are close to the Brahmaputra and are intersected by numerous rivers, rendering transport practicable. No timber felling is permitted however within these sacred precincts for fear of disturbing the game, which no one ever sees and which as far as the public is concerned might as well be in the mountains of the moon

To give some idea of the vast areas monopolised for game reserves the following figures are approximately correct :—

Sibsagar	approximately	100,000 acre	+ 50,000 since added.
Nowgong	,,	80,000	,,
Kamrup	,,	150,000	,,
Darrang	,,	60,000	,,
Total		390,000 acres	+ 50,000 = 440,000.

The above figures speak for themselves. These areas should be utilized for afforestation or cultivation. These tracts contain immense quantities of cane which is in great demand for saw mills, and building purposes. It is however locked up ; the Forest Department is a loser and the public is inconvenienced, and has to pay exorbitant rates owing to insufficient supplies.

Deficiencies in Forest transport.

The elephant until recent years was found a valuable adjunct to a saw mill for extracting timber and for transport purposes. Now, however, they are unobtainable unless at a prohibitory rate. This is again due to the ill-considered action of the Forest Department which has stopped " mela shikar, " hunting, which used to provide a fair supply of elephants at a moderate price. These animals were young and tractable and were mostly sold in the province so that public requirements could be met. The monopoly of catching elephants has been given to a single individual, who sends all the animals out of the province to its detriment. This person practises Kheddah operations, and catches the old breeding animals and young indiscriminately. This defeats obviously the professed object of the Forest Department, *i.e.,* to prevent undue depletion of supplies. The methods of the Forest Department are nothing if not inconsistent. As a remedial measure no monopoly for elephant catching should be granted, and " mela shikar " should be reinstituted. The capture of female animals might be discouraged, or only a small percentage allowed. These suggestions would infallibly prevent depletion of stock, if coupled with restrictions prohibiting undue exportation.

Competition from Forest Department.

Jail competition does not injuriously affect us to any extent but Forest Department competition in the sawing and sale of timber scantlings does. The material costs nothing, so it can afford to pay higher rate than we can for labour, with the result that some excessive rates are forced on us. The Local Boards are compelled to take scantlings from the Department. This is an unfair procedure and unfair to mills and traders. The recently instituted regulation of concentrating timber operations within very limited areas is greatly handicapping the saw mill industry, as the following should demonstrate. The trees are not gregarious, but are found growing very widely apart, consequently the quantity available within such circumscribed areas is quite inadequate fully to employ the requisite labour force. We are entirely dependent on the local labour. Consequently it is desirable to have the sphere of operations as conveniently arranged as possible. The practice, however, in vogue is to suit the convenience of the Forest Department.

Mr. Perree, the late Conservator, who framed the new rules, admitted, that he was not quite satisfied that concentration might not be injurious to the mill industry. His fears have been justified, but any request for remedy is ignored. Two or three square mile blocks are quite inadequate.

Other forms of Government Aid to Industries.

The supply might be controlled by the ability of the industry to utilize it in the interest of Government and trade.

upply of raw aterials.

Yes, by the enormous acquisition of land ostensibly for forest reserves but in reality for " game sanctuaries. " These contain no timber worth reserving but quantities that would be serviceable to saw mills which they are not allowed to utilize. The Forest Department has already more land than it can administer properly. These tracts are intersected by waterways facilitating transport. Unlike other Reserves exploiting within them is absolutely forbidden although they were included in the tracts held out as an inducement by the then Government to promote the saw mill industry. The action of the Forest Department in this matter is a distinct breach of faith. One Conservator, Mr. Hill, recognized this and permitted exploitation, but his successor withdrew sanction.

The exploitation of areas within one mile of waterways should be sanctioned. It would not disturb game in the least as well informed " shikaries " know.

General Official Administration and Organisation.

There should be a non-official Director of Industries. He should be a businessman with technical training and experience.

Financial Aid to Industrial Enterprises.

It would be an advantage to private saw mills to obtain machinery, etc., on the hire-purchase system, as a good deal of the present machinery is obsolete or in an unsatisfactory condition.

General.

In order to put the saw mill industry on a sound and commercial basis the rules and regulations for the supplies of raw material by the Forest Department require drastic revision. They should be prepared by broad-minded, intelligent men, with technical and commercial training, merely tinkering with them as hitherto will serve no useful purposes.

I am only concerned with the saw mill industry and Assam contains ample supplies for that, if facilities are afforded by the Forest Department. The forest reserves should be available for exploitation as are unreserved forests and operations should not be hampered by obstructive tactics as at present.

Enormous supplies of raw material are wasting in the forests of Assam and only wait development; the latter is retarded by want of official enterprise and indifference.

The dilatory methods and arbitrary style of the Forest Department.

To give the Commission a slight idea of the difficulties we experience in obtaining the material necessary to carry on our work, I would request consideration of the following which can be substantiated by documentary evidence. I executed an agreement with the Forest Department in 1900 for my timber supplies to be in force during my tenure of the mills; a clause provided for felling in reserves with previous sanction of the Forest Officer. This privilege was invariably granted until I had to make a complaint to the Local Government regarding the action of the Forest Department in prosecuting one of my contractors wrongfully. After the said complaint the privilege was refused without assigning any reason.

In consequence of the foregoing I submitted a petition through the Commissioner, Colonel Gurdon, on 16th December 1914, to the Chief Commissioner.

On the 17th June 1915, I received official intimation that my request was granted. I at once applied to have effect given to the sanction but was put off with various pretexts until May 1916 when I was again compelled to refer to the Chief Commissioner as my mills were shut down for want of timber and the Forest Officer refused to sell me any on the "trade permit system" on arbitrary and illegal grounds. I then pending effect being given to his own orders requested the Chief Commissioner to do this through my solicitor, but without effect.

On the 7th July 1916, in consequence of the Chief Commissioner's instructions, the Conservator of Forests entered into an agreement with me but its conditions have not been carried out yet. Owing to the arbitrary, inconsiderate and illegal procedure mentioned above, my mills have been closed down for months, and only working about one quarter time for two years; I have been unable to execute my box orders and my clients have been put to great inconvenience.

In accordance with the above-mentioned agreement trees have to be marked first by a Forest Officer. This is quite practicable in a few days but it took two months and then 20 days for issue the permits; by this time the workmen tired of waiting all dispersed. Shortly afterwards the river levels fell and transport became impossible until May next. Under such a *régime* and conditions, it is not surprising that industries make no progress and investors judiciously fight shy of such a province.

In case of grievances appeal lies to the Chief Commissioner, but this is a very disheartening procedure as it takes anything from six months to two years to obtain a decision.

The District Officer should be empowered to settle differences with appeal to the Chief Commissioner.

The Forest Officer should not have the power of closing down mills. In the event of cancelment of agreements, mills should be allowed timber on the Trade Permit System while settlement is pending.

The present Forest Law is inapplicable to Assam and should be amended. The same law, rules and regulations cannot consistently be applied to all India. It retards trade and industries and not a non-official has a good word to say for it. The conviction exists that unless alterations are made, and quickly, the chances of capturing trade when the expected revival takes place as well as new markets and ousting rivals are remote. The most trivial offences against Forest Law are punishable in the most drastic manner, so that contractors can hardly be induced to work. This is a great obstacle to extraction of timber. In the absence of press assistance to ventilate grievances all chance of redress is hopeless. Here are a few examples of Forest Law:

1. Settlement holders are entitled to secure drift wood, but if a saw is put into it they have to pay for first class timber.

2. My Contractor, Luku Kachari, was accused of setting fire to the jungle. The real facts were he cleared a place to light a fire to cook his food. He was summoned to appear at Golaghat—distant by rail and road some 150 miles distant. On appearing in court he was told the Forest Officer had not completed his case, the man was released on heavy bail and returned to Tezpur. He again appeared but the case was thrown out for want of jurisdiction. Some time after he was arrested and taken to Nowgong about 50 miles distant. There he was convicted, sentenced to three months' rigorous imprisonment and twenty-five rupees fine. He appealed to the Assam Valley Appellate Court which quashed the case and severely condemned the Forest Office procedure. This man had quite enough of forest work, so I lost his services and that of his gang.

3. In the Court of the Magistrate of North Lakhimpur.

Serial No.	Date of report or complaint.	Name and residence of complainant.	Name, parentage and residence of accused.
	14th June 1917.	Shaikh Gohain, R. Mohurir of Boduti, Forest Department.	M. C. Borsikia, son of Bibhuram Somal of Kechukhana, Mouza Dhinaji.

"*The offence complained of and date of its alleged commission.*—Removing 100 *simul* logs, without a 'trade permit' on 13th June, from unclassed State Forest, under rule 24, page 56, of Assam Forest Manual, and when called on by competent Forest authority to produce his timber and permit refused to do so, page 83, rule 83, of the Assam Forest Manual, and so punishable under rules 33, page 58, of Assam Forest Manual, and 90, page 85, of the Assam Forest Manual."

"*The plea of the accused and his examination, if any.*—Produces E and A and says he produced it, before the R. M. also another one, which is with his men in the jungle. When the babu searched 'on me,' to stop the timber I said I do, a little lower down, after turning the timber, and I did so, and showed the babu my passes and the marks T. Z. on my timber which I have put on. The babu did not mark the logs. I file a written statement E. and 3."

Remarks in re *above Contractor.*

Borsikia was authorised by the Tezpur Mills to fell timber under permit No. 9 of 1st April 1917.

This permit was checked by the Forest Officer (Tezpur) in consequence of orders from Deputy Conservator of Forests, Lakhimpur, on the 4th July 1917 and found in order. The Conservator (Mr. Tottenham) was advised of the existence of this Permit, 22nd September 1917 and informed the Deputy Conservator of Forests, Mr. Jacob, the actual prosecutor. At the first hearing the trying Magistrate suggested compounding the case. The Forest Department refused, the Mills reported the matter to the Conservator of Forests, who never replied, and offered to compound the case, rather than be harassed with interminable litigation, loss of timber, and trouble, but not as an admission of the Forest Department's procedure being legal or equitable in fact purely as a matter of expediency and submission to *force majeure*. It is indisputable that Borsikia was provided with a "Permit" and if the Forest Department doubted this, it could easily have inquired before launching a criminal prosecution for what under any circumstances would have been a mere technical offence, and of a compoundable nature.

This case was instituted on the 14th June and the judgment acquitting the accused was delivered on the 22nd of December 1917. During these 6 months there were 5 adjournments, precluding the man's carrying on his occupation, a large quantity of his timber was lost, the mills and tea gardens were put to serious inconvenience, and the Magistrate's time was needlessly wasted. A reign of terror was occasioned amongst the Contractors and workman, and no one could be induced to work, especially the "Miris," who do the "rafting," and who require very tactful handling. It is very evident that procedure, such as described, is not a promising method of fostering the saw mill or any other industry, and if there is any desire or intention on the part of Government to do so a new system must be adopted.

The injurious effect of this on labour can be easily understood, and indicates the necessity for reform if industries are to be encouraged. Incidents like the above could be multiplied indefinitely.

ORAL EVIDENCE, 7TH JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* What is your regular business; tea or timber?—*A.* At present I am proprietor of the Tezpur Saw Mills.

Q. You have no tea industry along with it?—*A.* No, I have some interest in tea shares.

Q. You are not directly concerned with the tea industry?—*A.* No.

Q. How many years have you been in Assam?—*A.* Since 1883.

Q. When did you start your saw mills?—*A.* In the year 1893.

Mr. C. E. Low.—*Q.* You say in paragraph 5 of your evidence, "Sir Archdale Earle remitted for two years the crushing royalty tax of 33 per cent on our profits, thus admitting its unfairness. It has since been reimposed at its previous excessive figure, it is beleived, at the instance of the Forest Department." That tax represents the price of raw materials?—*A.* Yes.

Q. That is what your wood costs you?—*A.* Yes, we obtain the wood at a certain rate, as. 3 per cub. ft., pay a royalty of 1 anna per each box, and it takes us 12 annas to make the box.

Q. I am talking about the raw material. The Forest Department uses the word royalty, which is really a misnomer, because it is the price at which they sell the raw material?—*A.* They don't sell it to us in that way; they charge a royalty on the outturn.

Q. But that is the price of the raw material?—*A.* Yes, but only as far as Government is concerned; besides this we pay the contractors 3 annas per cubic foot.

Sir F. H. Stewart.—*Q.* There is no other payment for the raw material?—*A.* No, not to Government.

Mr. A. Chatterton.—*Q.* Is your profit 3 annas per box or 4 annas?—*A.* It is approximately 4 annas.

Mr. C. E. Low.—*Q.* Do you consider that excessive; one-third of the cost of your raw materials before the war?—*A.* Before the war it was excessive.

Q. You think that if the price of the raw material is one-third of your profits that it is excessive?—*A.* I think so.

Q. Then you go on to say "thus admitting its unfairness". We understand from papers which the Assam Government have furnished us with that the reason why it was remitted was not because they considered it unfair, but to enable the saw mills to put down improved plant, and improve the style of their shooks?—*A.* They also took into consideration the fact that the mills were not paying, and that some consideration should be given.

Q. And they thought that the way for the mills to pay was to improve their machinery?—*A.* Yes.

Q. Was not that what the exact object of the Assam Government was?—*A.* It was generally accepted by the saw mills as a set-off against the losses that they had previously incurred.

Q. I think the Assam Government meant that it was to enable the mills to improve their machinery?—*A.* That was subsequently; that was an afterthought; that was not when it was first granted; they said nothing whatever about that.

Q. That is a question of fact on which my information and yours differ. Did you improve the machinery in your mill?—*A.* Yes.*

Q. I noticed from the figures I had (I don't know if they are correct: they rest on the authority of the forest officials) that the royalty was remitted apparently some time in the rains of 1912, August 1912, and your output of boxes in the year 1911-12 was 24,000, but the first year the royalty was remitted it went down to 12,000, and the next year to 15,000?—*A.* That was due to our inability to get timber, and to the fact that returns outturn were not submitted during the period royalty was remitted to the Forest Department.

Q. Why could you not get timber?—*A.* Owing to various reasons, principally to the obstructive regulations of the Forest Department, and also to the dilatory procedure adopted by them in granting permission to fell.

Q. Would the improvement in your machinery enable you to get better prices for your shooks?—*A.* No, we generally have fixed prices. We do not alter our prices.

Q. Did it enable you to make more shooks out of logs, or did it tempt your consumers to make larger purchases from you?—*A.* No, I don't think so; the amount was comparatively trival. The sum that we gained by the remission of royalty was very trivial; it only enabled us to put new parts of machinery, but not any new machinery.

Q. The incidence of the price of the material was on your average outturn about Rs. 100 a month?—*A.* Yes, but only as far as royalty was concerned.

Q. You still consider that a heavy item in your expenditure?—*A.* At present we have raised the price of our boxes.

Q. Coming to the question of this contract of yours I understand you got a lease in 1900 by which you were allowed to cut wood in the unserved forests in four districts?—*A.* And also in the reserved forest, with the consent of Forest Officor in the same districts.

Q. Then, I think, in 1909, in consequence of some criticism by the then Inspector-General of Forests, who was of opinion that definite areas should be assigned to definite mills, instead of their being allowed to cut out of the same area, it was proposed to amend the lease?—*A.* That was not brought forward until 1915.

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*This explanation is perfectly correct. Mr. Low's information is not so, *vide* No. 1852-R., dated 22nd August 1912, from the Chief Secretary, to the Conservator of Forests.

"With the object of assisting the tea-box industry, the condition of which is not at present satisfactory, the Chief Commissioner considers it necessary that the system now in force of realising royalty on the tea boxes should be abandoned as a temporary measure on the distinct understanding that it will be reimposed when the prospects of the industry improves."

It is evident from this that no stipulation regarding devoting the remitted royalty to purchase of machinery was contemplated. The first mention of this occurs in No. 1032, of 17th March 1913, from the Second Secretary to the Chief Commissioner, *i.e.*, 9 months after the remission took place.

Q. I think as a matter of fact, whether any action was taken on it or not, that that criticism was passed in 1909. There were negotiations between you and the Forest Department with reference to this contract of 1900; there were negotiations in 1909-10?—*A.* There were no negotiations.

Q. They wanted you to modify the contract in 1909-10?—*A.* Nothing more than that they said that I would have to cancel the contract.

Q. They were putting pressure on you in 1909-10 to obtain some modification?—*A.* Yes.

Q. Were there any other mills drawing their supplies from these same areas, the unreserved forests of those districts?—*A.* Yes, all the mills in Lakhimpur had the right. There were no blocks assigned to any mill; they could cut wherever they liked.

Q. Does it not seem rather an inconvenient arrangement to have two mills cutting in these same areas; supposing the other fellow broke the law, might you not get blamed for nothing, and *vice versâ*?—*A.* There was no complaint up to that date. There may have been one or two disputes, but nothing worth considering.

Q. From the point of view of the Forest Department, they would have found it extremely difficult to keep any check, because they would not know which mill did the cutting?—*A.* Yes, they would know, because every tree is marked by each mill on the stump of the tree.

Q. It is supposed to be, but it is not always done?—*A.* It is not always done, because it is very difficult to get natives to do anything thoroughly. It is to our advantage to have it done, and we do our best, so that no one else may take our timber.

Q. You make a blaze and then you cut the tree?—*A.* Yes, leaving the mark on the stump, so that there can be no question of whose timber it is.

Q. How many mills were there then working, say, before the war broke out?—*A.* There was only really one mill besides myself working in that area. The Sissi mills were working higher up.

Q. When did Meckla start?—*A.* It has been in existence a long time. It does not trade on our allotment; it is right up Dibrugarh, a hundred miles higher up. Practically we have only one rival mill there which is the Boduti mill.

Q. Coming back to this question of royalty, as the Forest Department call it, was there any general representation by the mills against the existence of the royalty?—*A.* Yes.

Q. All the mills joined?—*A.* Yes. It was brought before the Legislative Council and I believe Mr. Perree, the Conservator, said that they were going to consider it, but nothing came of it.

Q. Putting aside the war, do you think that in non-war times, and in non-war conditions you expect to get your wood for nothing?—*A.* No, we said it should be reduced 50 per cent. The Sissi Saw Mill was paying 7 per cent on their whole capital as royalty.

Q. Seven per cent of capital for the purchase of raw materials is low in most cases?—*A.* That was a tax before the shareholders got anything; so that on that score they objected.

Q. They began to put pressure on you to agree to a modification?—*A.* Yes.

Q. I have not seen the contract, so that I am rather at a disadvantage?—*A.* I have got the contract and will leave it with you to see.

Q. On what ground did they want you to alter it?—*A.* The ground was that the other mills had a different agreement.

Q. I remember this much, that it was stated in the contract that you were to pay such and such a rate, and if the other mills came along and agreed to pay a higher rate, then your rate was to be modified; but this was not a question of rate but of areas that they were discussing with you?—*A.* No, I don't think that they contemplated altering all the agreements. The other agreements were of a different kind to mine. They could not cancel my agreement legally, and to force me to do it, they threatened to cut off my timber supplies from the Lakhimpore area.

Q. Under what right did they?—*A.* They quoted clause 9 of the agreement, which does not apply at all, and which gives them no right whatever.

Q. Was the agreement for a definite period?—*A.* For my tenure of the mills, as long as I had the mills; but if I sold the mills to anyone else, a new agreement had to be executed, as in my case. I bought the mills from the Sissi Saw Mills; the agreement was then cancelled and a new agreement entered into. It was the agreement of 1900.

Hon'ble Sir R. N. Mookerjee.—*Q.* Was it with the object of increasing the revenue that they asked you to modify the agreement?—*A.* They did not give me any option at all in the matter.

Mr. C. E. Low.—*Q.* I think the overt reason was that they wanted areas assigned to certain definite saw mills?—*A.* They did not inform me of their object.

Hon'ble Sir R. N. Mookerjee.—*Q.* It was not done with the object of increasing their revenue?—*A.* No, because they did not increase their rates at all. When I made the agreement in 1909-10, the question of cutting within certain areas had not been brought forward.

I knew nothing at the time. That was not the reason given for their cancelling my agreement. The reason was that they wished to bring my mill into line with the other mills.

Mr. C. E. Low.—*Q.* Was there a clause in the agreement as to rates?—*A.* Yes.

Q. You say there was nothing of the same kind about areas?—*A.* Nothing of the same kind.

Q. As a matter of act, did you consent to the modification of these areas?—*A.* Not areas; I consented to signing a new agreement, similar to the other mills, as Mr. Perree, represented to me that it would be awkward to work two mills differently. In deference to Mr. Perree I agreed to it. That was in 1909.

Q. Was that new agreement actually entered into, and put into force?—*A.* Yes.

Q. Was it worded in the same sort of style as the other one?—*A.* No, it is more elaborate than the other one.

Q. By whom is it drafted?—*A.* Mr. Perree; at least I presume by Mr. Perree.

Q. What did this revised agreement purport to give you by way of areas?—*A.* There was nothing about areas; that was a subsequent thing.

Q. There was no alteration, no modification of your areas as given in 1900?—*A.* No.

Q. Did you enter into any agreement modifying the areas of your 1900 agreement?—*A.* No, there were no areas specified in the 1900 agreement. We were given districts to cut in. There was no modification of that.

Q. Although you have been pressed to do so, you have not entered into any agreement modifying the areas of your 1900 agreement?—*A.* In 1909 I signed that agreement. There was nothing in that agreement about areas within which we were to cut. In 1915 this arrangement for working within prescribed boundaries was started by Mr. Perree, restricting us to work within certain areas. That was a decision on the part of the Forest Department, without consulting us in the matter.

Q. Did you fall in with that willingly or otherwise?—*A.* I got notice of the cancelment of that 1909 agreement, and we were to work on the terms of the old agreement, until the new agreement came into force. I was left out, but the other mills signed the agreement. I was not called on to execute the agreement; the other mills did so in September 1915, and on finding this out, I applied to have my agreement put into force. Then I was allowed areas which were not in accordance with those promised by Mr. Perree, and I declined to sign the agreement. Then Mr. Perree was transferred, and the matter has been under dispute.

Hon'ble Sir R. N. Mookerjee.—*Q.* Up to now you have not signed any agreement?—*A.* No, not for Lakimpur.

Q. And you are not working?—*A.* I am working in the other districts, but not in Lakhimpur.

Mr. C. E. Low.—*Q.* Are you still cutting, as per your agreement of 1900?—*A.* Yes. In Nowgong I am cutting under a new agreement, because my 1900 agreement did not apply to Nowgong.

Q. You go on to speak of these large areas closed for game reserves: would you go into a little more detail?—*A.* The reason I raised that point is that the reserve mentioned in Sibsagar was one of the areas I was permitted to fell timber in; and one of the areas which induced me to sign the original 1909 agreement. Consequently, I considered that I had a right to fell timber there.

Q. In that agreement did it say anything of what was to happen if an area at that time unreserved was reserved in the future?—*A.* No. Government then reserved that and interdicted my felling timber there.

Q. I suppose Government said that if any forest becomes reserved, you had no right, and your contention would be that at the time of your agreement these things were unreserved and you should be compensated?—*A.* Yes.

Q. Not alluding now to the question of the agreement, but to the point you raise that people are not allowed to work because they are reserved for game, what reason did Government give for reserving these areas? They don't say they reserve them for game?—*A.* They call them 'game sanctuaries' in letters to me.

Q. That is done in other parts of India, because they say that game is over-shot in certain areas and they keep certain game sanctuaries. Do they allow any exploitation of timber in those areas?—*A.* No, but in other reserves they do.

Q. They don't allow any cutting at all? *A.* No. There are immense quantities of cane in those areas, which was stopped; cane for basket making, binding, etc.

Q. Aren't there other areas around which are equally convenient?—*A.* No, this sanctuary takes up the whole river frontage for about 60 miles.

Q. At the back of this area are there no other forests?—*A.* The main road of Assam runs on the south side, close to the Meka Hills, and practically there are no forests there; there are bamboo forests.

Q. Up and down the river from this reserve, what forests are there?—*A.* No first-class timber in the whole area; but there is a considerable quantity of *simul* and other trees

which would be suitable for box-making. Mr. Hill, to whom I applied, gave me sanction to cut in the reserves, but the next officer came and cancelled it, for the reason that there was a case made by the forest officers against some of my men for felling timber illegally, but that case was not proved. The Conservator then said that, pending the decision in that case, he could not grant me permission to fell timber. From that I inferred that after the case was settled, I would have received back the permission given by Mr. Hill, but it was not so.

Q. About these elephants; you say they are unobtainable owing to 'mela shikar' hunting being stopped?—*A.* Since that was written, 'mela shikar' hunting has been re-opened.

Q. What does this 'mela shikar' hunting mean?—*A.* Catching elephants by means of lassooing.

Q. In what way is that better than the 'kheddah' operation?—*A.* They catch in Keddahs old breeding animals with the result that it does harm to the propagation of the species.

Q. Alluding now to the rows in which your contractors are concerned, to what do you consider these rows are attributable?—*A.* I think the underlings in the Forest Department very often cause these rows from disappointed hopes.

Q. Is the box royalty system still going on?—*A.* Yes.

Q. And the trade permit system is not going on?—*A.* The trade permit system is not adopted by the saw mills, because the difficulties in the way are very much greater than the arrangements we have with Government for obtaining timber and paying royalty. But it would be preferable if it could be worked on more businesslike lines to have the trade permit system, because we would be free from all this interference.

Q. Is any dredging or draining of rivers, important from the business point of view, undertaken by the Forest Department?—*A.* I have not seen any attempt made.

Q. Have they been surveyed with a view to training operations?—*A.* Not to my knowledge. The snags used to be cut to admit of small steamers going up; but since they have discontinued using steamers in that river, it is chockful of snags.

Q. Do you do anything yourself in the way of improving the rivers you are working on?—*A.* My men have had to clear it to let their rafts pass; but that is only to suit their immediate necessities.

Mr. A Chatterton.—*Q.* We have not had the advantage of seeing any of the saw mills in Assam. Could you tell us what sort of equipment you have got in your saw mills?—*A.*—The following is a list of machinery in the Tezpur Saw Mills:—

30 H. P. Lancashire boiler.
8 H. P. Vertical boiler and engine.
6 H. P. „ „
25 H. P. horizontal engine.
1 Breaking down saw.
6 Circular saws.
3 Cross cut saws.
2 Planing machines.
1 Saw sharpener.

Q. Do you work the boiler with the refuse from the saw mills?—*A.* Yes, as much as possible, using a good deal of dry sawdust.

Q. Have you to use coal?—*A.* A little, not a very great quantity of coal; about 5 maunds of coal a day.

Q. What does coal cost at Tezpur?—*A.* Annas ten and pies six a maund, Assam coal.

Q. How was the price of boxes fixed before the war?—*A.* There is a recognized price. We are not under any necessity to give boxes at a fixed price, but it is a practice generally adopted by other mills. There is a recognized tariff adopted from the time the mills started, and they did not alter it.

Q. What proportion of the boxes used in Assam are made locally, and what proportion are imported?—*A.* I should think only a very small percentage is made locally. Local boxes are considerably cheaper.

Q. Are they inferior to, or of the same quality as, imported boxes?—*A.* They are not as good, but they serve the purpose equally well.

Q. Why do you complain of having to pay so much for your timber from the Forest Department, when you can recover the amount by raising the price of your boxes?—*A.* The box business is entirely in the hands of agents in Calcutta, and they supply the gardens with the boxes they think best.

Q. Is there a perfectly free market for boxes locally made. You were turning out twenty or thirty thousand boxes a year, which is a very small proportion of the boxes wanted. If you turned out 100,000 boxes a year, would you be able to sell them easily?—*A.* I think so. We can turn out 100,000 boxes if we had the material.

Q. Supposing you had 100,000 country-made boxes, would you have a free market for them ?—*A.* Yes, there would be no difficulty about selling them at low prices.

Q. But you would not be able to get anything like the price of imported boxes ?—*A.* I don't know ; I suppose if they could not get imported boxes, they would have to pay the price.

Q. The managers of tea factories are paying a higher price for imported boxes than for locally-made boxes. Are they not oppressing you just as much as the Forest Department ?—*A.* The reason is that they cannot rely upon the local box mills, because the timber supplies are so uncertain.

Q. You mean rely on the quantity or quality ?—*A.* For quantity, in regard to the fulfilment of contracts, all the mills are the same.

Q. What area was covered by the leases to cut timber you were given in the four districts you have mentioned ?—*A.* We were then allowed to cut timber within a mile of the banks of the river.

Q. How many hundred square miles would that amount to ?—*A.* I could not say without the map. Probably about 50 square miles in one district. From the river it would be that area, but there is not much timber on that. The timber is very widely scattered.

Q. Your saw mill I suppose is on the banks of the river ?—*A.* Yes.

Q. Have you done anything at all in the way of boat-building ? Have any attempts been made to introduce better methods of boat construction than are prevalent here ?—*A.* No.

Q. You complain that there is a royalty of 5 annas per cubic foot on first class timber. What is the value of first class timber per cubic foot ?—*A.* I believe it is sold here at Rs. 2-4-0 per cubic foot.

Q. What timber would that include ?—*A.* Sal, and different kinds of wood ; very hard woods.

Q. In regard to the game sanctuaries, you say, "The cultivators have been expelled from these areas, and traders prohibited from operating within them." You mean that actual cultivators were turned out of areas ?—*A.* There was a good deal of mustard grown in it. These people were all driven out.

Q. Had they got *pattas* ?—*A.* Only annual *pattas*.

Q. What do you mean by 'traders prohibited from operating' ?—*A.* These people take the *mahal* and obtain large quantities of cane from there, which they use for making baskets for tea gardens.

Mr. C. E. Low.—*Q.* Were cultivators also turned out from all forests, whether game sanctuaries or not ?—*A.* Personally I cannot say that. I know in the Kasazunga they were turned out. I could not say, except from hearsay.

Mr. A. Chatterton.—*Q.* Then you complain of the Local Boards being compelled to take scantlings from the Forest Department. Do you think it unfair that Local Boards should be allowed to utilise local resources in the cheapest possible way ?—*A.* It does not affect me personally, but I have been asked to bring this forward, and think it is unfair.

Q. You say that in most of the saw mills at the present time the "present machinery is obsolete or in an unsatisfactory condition."—*A.* It does not improve.

Q. Most of these mills have been established for a considerable time ?—*A.* Yes, for over 25 or 30 years. They have been adding to the machinery, as saw machinery is susceptible of renewal.

Q. With abundant forests around you, why are you not able to manufacture boxes to meet competition from abroad ; and why is it that you cannot keep your mills up to date and turn out a satisfactory article ?—*A.* Because we cannot get the timber.

Q. What is the difficulty ? You had a concession you say for cutting timber from 1900 to 1909. Is it the natural difficulties of the country or artificial difficulties introduced by the Forest Department ?—*A.* What I complain of is the interference of recent years.

Q. I am talking of prior to recent years ?—*A.* I had no reason to complain up to 1909. We were making a fair profit.

Q. But you did not keep your saw mills up to date ?—*A.* I don't know what you exactly mean by that.

Q. I am taking your own statement that the mills were not up to date.—*A.* I simply say the machinery is to some extent obsolete, but it does not follow that it does not work.

Q. Are the saw mills owners utilising the resources they have got in the best possible way, or owing to the fact that they have got inferior machinery are they wasting a good deal of material which might be used ; and consequently since they are not making a profit are they not inclined to attribute their lack of success to irrelevant or minor causes, such as the forest regulations ?—*A.* I don't agree with you in that. The same machinery that was in vogue 20 years ago is still supplied by the manufacturers. There have not been any great alterations. The same saw that was used 20 years ago is still used, and is still supplied by manufacturers.

Q. Have you any band saws in Assam?—*A.* I believe that there are two, but band saws are not suited to our work at all. The timber we get is dependent entirely on the ability of the elephant to get it out of the jungle.

Q. You cut up your logs in the jungle?—*A.* Yes, we are limited to certain sizes and lengths, and if you want to use band saws profitably, you must have long lengths of timber.

Q. One of your difficulties is the difficulty of extraction?—*A.* Yes. We have no roads in the forest, and we even have difficulty in getting permission from the Forest Department to make the roads and extract the timber.

Sir F. H. Stewart.—*Q.* You say, "Sir Archdale Earle has shown some interest in the industry, and deputed a special officer to improve timber supplies." Can you give us the name of this officer?—*A.* Mr. Perree.

Q. You then say, "He was succeeded by an officer from Burma". Who was he?—*A.* Mr. Tottenham.

Q. With reference to your remarks on the insufficiency of transport facilities, is there an engineer attached to the Forest Department in this province?—*A.* No, not to my knowledge.

Q. Is there anyone with commercial experience or training?—*A.* I don't think so.

Q. You say, "At present Darrang Division is being run by an officer with no experiences or technical knowledge. His office is situated 25 miles from the station." What station is that?—*A.* Tezpur.

Q. Has his office always been 25 miles from the station?—*A.* No, it was always in Tezpur within the last 2 years.

Q. Who is this officer?—*A.* Captain Neville.

Q. With reference to Mr. Chatterton's question about the area from which you are permitted to extract timber, you share that area with other mills?—*A.* Yes.

Q. You say that Mr. Hill permitted exploitation of forest reserves, but his successor withdrew sanction. Who is his successor?—*A.* Mr. Carter.

Q. The present procedure is that if you have trouble with the Forest, the appeal lies only to the Chief Commissioner?—*A.* Yes.

Q. The District Officer cannot intervene at all, unless he is specially deputed by the Chief Commissioner, and that you would like to see altered?—*A.* That has since been altered by the Chief Commissioner. He has given me an assurance that that will be done.

Q. The case you cite of the prosecution of a contractor, was he one of your contractors?—*A.* Yes.

Hon'ble Lieutenant-Colonel P. R. T. Gurdon.—*Q.* This new agreement which you speak of, under which the Boduti mill work, what is the date of the agreement?—*A.* I believe it is 1915.

Q. Have you got a copy of the agreement here?—*A.* Yes, I have a copy of th general agreement.

Q. The point is, does it convey any monopoly?—*A.* No, it says no monopoly.

Q. In the area where the Boduti mills now cut, any one else can cut, if they pay th royalty to the Forest Department?—*A.* No, the Forest Department object.

Q. You remember that when I made the enquiry into your case in March 1917, suggested with reference to this dispute, as regards the area under which you should cut, that you should be allowed to cut as far as the Subansiri River up to the right bank of the Subansiri River, as far as the Bordeobam Tea Garden. Do I understand that you were prepared to accept the compromise I suggested at the time, in settlement of this dispute with the Forest Department?—*A.* It was less favourable to me, but I agreed in the presence of Mr. Tottenham to accept your decision in the matter, but Mr. Tottenham refused.

Hon'ble Sir R. N. Mookerjee.—*Q.* Besides yourself, are there any other saw mills that have similar complaints against the Forest Department?—*A.* I cannot say, but I know they are not satisfied with the arrangements of the Forest Department.

Q. They have not suggested any remedy?—*A.* We did get up a petition some 2 years ago, but it was not brought forward, because, as I have mentioned, the royalty was remitted. There were other points brought up in regard to the general methods of the Forest Department.

Q. Your complaint is mostly personal rather than against the general rules of the department?—*A.* My complaint is that the methods are not practical; that they require revision; and I think it is also impossible to expect an inexperienced and untrained officer to give sufficient attention to matters especially when he is employed as a political officer in addition to his duties.

Q. But other saw mill owners do not make that complaint?—*A.* I understand that question would arise, but the managers of saw mills are not inclined to have disagreements with Forest officers, because the mills are dependent on the Forest Department. I am in a

position that I can have disagreements without such fear. I know perfectly well that other people who use forest produce are simply afraid of reprisals.

Q. Have you approached your Forest officers in a friendly way, pointing out that their methods are not workable methods?—*A.* Some of the officers are hostile and some are friendly. As a rule we find the Forest Officer very sympathetic and willing to help us but we occasionally have some who are not so.

Q. Then it comes to this that if a good man is there, everything goes right.—*A.* Yes, a trained officer is a gentleman who has some sympathy with industries; otherwise we suffer.

Mr. C. E. Low.—*Q.* Your great competitors all the time were the makers of 3-ply boxes, like the Venesta?—*A.* Yes.

Q. It was claimed on behalf of those boxes that they were lighter and more approximately damage-proof than ordinary shooks. Did you ever make any attempt to compete by turning out 3-ply Venesta boxes?—*A.* No, because it requires immense capital.

Q. You know that Bird & Co. claim that they are going to open shortly there?—*A.* Yes.

In reply to a question from Sir R. N. Mookerjee, the witness stated that one reason given for the appointment of a political officer as a Forest officer was that, owing to the shortage of Forest officers, no one else could be appointed. The witness suggested that the Forest officer of Kamrup should work Darrang, as was formerly the practice, from Kamrup, when there was a shortage of officers, but that was not considered feasible. He then suggested that some of the numerous Indian officers, who were properly trained men, should be appointed. There were numbers of those men available, and one especially, Kanjilal Bahadur, acted for many years in Sibsagar. The witness thought that such a precedent was sufficient to show that that could be adopted.

Hon'ble Sir R. N. Mookerjee.—*Q.* What reply did you get to that?—*A.* No reply whatever. The present officer is inexperienced in forestry and he has got other duties of a political officer which take him away the whole year practically, and he spends very little time in the district.

Q. If I remember right, you once complained against Rai Bahadur Kanjilal?—*A.* It was he who stopped my cutting timber in the Kasiranga reserve. That was the only complaint I had against him, and the case that was made against some of my people for some forest offence.

Q. The Government could not possibly again put that man in charge of the forest in your working, when you complained against him.—*A.* That was not a serious complaint. Colonel Gurdon settled the complaint.

Witness subsequently sent in the following letter regarding the agreements entered into by him with the Forest Department.

Dated Tezpur, the 9th January 1918.

From—O. A. BYRNE, Esq., Proprietor, Tezpur Saw Mills,

To—The Secretary, Indian Industrial Commission.

I have the honour to request that favour of the following being placed before the Commissioners.

2. It occurs to me that my explanations regarding the various agreements entered into by me, with the Forest Department, may not have been quite clear, I therefore wish to place the matter beyond the possibility of misunderstanding.

3. The agreement of 1900 was executed, at the instance of the then Conservator, as he did not consider the contract with the previous owners valid, after sale of the mills to me. A new one was accordingly executed on the 25th July 1900.

4. In 1910 I was warned that, unless I executed another agreement for Lukimpur, I would not be allowed to utilise timber from that district. Under this pressure, and strong protest, and as a matter of expediency, I executed an agreement, much less favourable to my mills, on the 13th December 1910.

5. On the 13th February 1913, it was notified that the agreement of 1910 would terminate in 12 months' time, when a new form of agreement would be introduced.

6. On the 13th February 1914, I was informed the new agreement was not ready, but that I could continue to utilise timber until such time as it was.

7. In February 1916, I learnt that the new agreement had been executed simultaneously, in the previous September, by Meckla Nuddee, Sissi, Boduti, Hopewell, and Halkutta, saw mills.

I at once communicated with the Forest Department, and after several months, an agreement form was sent to me for execution. Finding the areas allotted to me were not the same as those agreed to by Mr. Perree, the Conservator deputed to arrange the timber supplies, and which had been approved of by the Chief Commissioner. I called attention to this, and to the fact, that the areas allotted to me had already been heavily exploited by the

neighbouring mills, that they contained no timber within 1½ miles of river, which was impracticable for floating during 7 months of the year. I made repeated applications for the areas to which I was entitled, but was refused, and ordered to fell no timber unless I executed the agreement. Under the circumstances I had no other course open to me but refer to the Chief Commissioner. For adopting this procedure, which I did most reluctantly, I have been designated quarrelsome and contentious.

The Chief Commissioner ordered an inquiry by Colonel Gurdon, who proposed a settlement to which I agreed, although less favourable to me than I considered I was entitled to. The Conservator (Mr. Tottenham) refused to acquiesce. The matter is consequently still pending, and in the meantime my timber supply is cut off, while only sufficient can be obtained from the other districts, to keep my mills going quarter time, when every possible box is required by the tea gardens.

8. One of the Commissioners inquired about our areas of exploitation, but as I did not anticipate being questioned on this subject, my replies may not have been as lucid as desirable. However the following should remedy this :—

In Darrang District, we have been allotted a block of about one square mile in area. This is quite inadequate, but we have been refused another block.

In the unreserved forest we are allotted the right bank of the Borelli, but as it contains no timber of prescribed size, within extractable distance from the river it does not count.

In Nowgong we have been given a block of 2,290 acres, but it does not contain a single tree within 1½ miles of river of prescribed girth.

In the Sibsagar District we work under the 1900 agreement. There is some timber in this district, but not sufficient to give employment to the number of contractors required to keep the mills going full time.

In Lukimpur we are not allowed to work, pending a settlement with the Local Government.

This is the only district in Assam containing suitable box timber, *vide* the "notes" of Mr. Pearson, Imperial Forest Service, Dehra Dun, who toured Assam to inquire into tea box and timber supply matters. A monopoly of this district has been given to a small mill which came on the scene years after the Tezpur mills.

9. From the foregoing (which cannot be fairly disputed), it is obvious that facilities for obtaining timber, leave much to be desired, and if the intention to foster industries is genuine, it is difficult to reconcile it with the procedure and methods in vogue.

10. The comments and criticism in the Calcutta and local press show that my views, regarding Forest Department methods, are not singular and clearly demonstrate the necessity for reform and reorganisation, if any progress (industrial) is to be expected.

Rai Sahib Monomohan Lahiri.

Witness No. 401.

Rai Sahib Monomohan Lahiri, *Member, Provincial Industries Committee.*

Written Evidence.

Financial aid to industrial enterprises.

Raising capital.

I was a promoter of a Joint Stock Company which was probably the first Joint Stock Company with Indian capital in the Brahmaputra Valley of Assam and have been a director of this Company since its registration in 1896. The principal business of this Company is buying and selling imported and Indian goods; but we opened a manufacturing branch in which we made socks and stockings by power machines and made experiments to see if it was possible to improve the already existing weaving industry of Assam by the introduction of automatic looms and labour saving warping apparatus and to manufacture matches and other articles. I am now running an electric plant as a family concern for the lighting of the small town of Tezpur and a rice mill. My opinions are based on the little experience I have acquired as the director of the Company and by the experiments mentioned above in which I took a prominent part. We started as a private concern with small capital and made good profits, and we had no difficulty in raising the working capital which is at the present moment a lakh and half including the deposits. Most of our shareholders are the clerks and officers.

Government assistance.

Government aid is absolutely necessary for the development of industries and all or any of the methods suggested in paragraph 17 of the preliminary notes may be resorted to according to circumstances. Occasional inspections of accounts and plants and machineries are all the control that the Government should exercise and nothing more, except in the case where the Government is a subscriber and in that case the shareholders if they so desire may appoint a Government officer to be a director if qualified according to the regulations of the concern.

Technical Aid.

For the Province of Assam demonstration factories may be instituted regarding the following and on the lines suggested below :— Demonstration factories.

(*a*) Weaving by improved looms.

(*b*) Silk-reeling and if possible silk spinning.

(*c*) Manufacture of matches.

(*d*) Electro-plating and typing.

(*e*) Sheet metal works with presses and other works that can be done without the use of prime-movers and that require only small capital.

Weaving.—Every woman in the Brahmaputra Valley is an expert weaver. With a little organization the weaving industry can be much improved and the whole Province can be made self-contained in regard to ordinary cotton textiles. The existing appliances and the processes of manufacture are very crude and if left alone the loom in time will be a mere curiosity. That the industry cannot under the present method of working be a success commercially is evident from the following figures :—

The cost of manufacture of a piece of cloth 5 yds. by 42 inches of 40's. warp and 50's. weft on an ordinary hand loom :—

Labour of sizing, reeling when wet, reeling when dry, warping, heddling, etc.

	Rs.	A.	P.
3 days of 8 working hours each at annas 5 a day . . .	0	15	0
Weaving with pirn winding at the rate of 9 inches an hour, 2½ days at annas 5 a day.	0	12	6
	1	11	6

Such a piece of mill cloth can be had for Re. 1. The loss therefore is 0-11-6 *plus* the price of the yarn and the size. Even if the efficiency of labour be twice as much, the working will not be profitable. By the introduction of automatic looms such as Hatterley's and Raphaels' the production can be increased 12 times. The preliminary processes from sizing up to heddling now cost as much as a piece of woven fabric. This can entirely be avoided by purchasing readymade warps from the mills at a small extra cost over and above the price of the yarn until a satisfactory and economical method of making warps is found out. The tension of the warp threads of hand made warps is never uniform and there is much breakage involving loss of time and the extra expense for mill made warps will be well spent.

I would therefore propose that a demonstration factory be established in Assam with automatic English hand looms such as Hatterley's or Raphaels' to be worked with ready made warps and with fly shuttle looms to be worked with hand made warps. Mill made warps of short lengths of say 100 yards each are not available now and some arrangement should be made for the supply of such warps. Men trained up in the demonstration factory may start small weaving factories with a small number of power looms driven by oil engines.

Silk-reeling.—This should be done by improved and labour saving reeling machines. Silk spinning from Eri cocoons may also be demonstrated if possible on a small scale.

Manufacture of matches.—There are various kinds of soft wood in Assam and with a little organization a business for the manufacture of matches can be developed. Machineries for the manufacture of boxes for the matches are very expensive and these can be avoided if women and children are trained up to make them. At a suitable station a small demonstration factory may be established with one decorticating, one veneer cutting and one splint splitting machine. The veneers when cut may be distributed among women and children for making them into boxes at home at a certain rate per gross. The splints may similarly be distributed for being tipped. When collected the boxes and the matches may be packed up and offered for sale. An artizan population may thus be built up and factories may be established. There are waterfalls in Shillong and vast pine forests close by and these can be very profitably utilized.

There should be a central demonstration factory with experts for higher industrial training, and the students for these factories may be recruited from the smaller provincial factories. All demonstration factories should be equipped with prime-movers.

Assistance in Marketing Products.

I know from experience that it is very difficult to sell the products of small industries. Commercial emporia for the sale and display of such products will be of great advantage. These should be established in all the commercially important towns of India under the control and management of reliable persons, or Co-operative Societies. A very small margin of profit will pay the costs of management and advertisements. The hosiery factory referred to in paragraph 1 of these notes had much difficulty in disposing of its products. Sales agencies.

Training of Labour.

Training in demonstration factories.

Skilled labour is dear in Assam. The ordinary rate of wages of unskilled labour is from 0-7-0 to 0-8-0 annas a day of 8 hours nominal, that of skilled labour such as masons and carpenters is from Re. 1 to Re. 1-4-0 a day; ordinary labourers have neither the ability nor the desire to learn. Boys, who have left the school after a few years' study would not touch the plough nor the hoe, but they would have no objection to work at machines. We may utilize their services in the demonstration factories. There are many women and children who would not come to a factory but would have no objection to work at home. Their services may be utilized in the way suggested in the notes about the manufacture of matches. Demonstration factories may be the training ground, no separate industrial schools are required. These should be under the control of the Department of Industries. Men from the central demonstration factory may be selected to be the supervisors.

Official Observation.

Director of Industries.

Central Demonstration Factory.

There should be a Director of Industries for the Province of Assam. A model Director in my opinion is one who is a businessman, a scientist, an economist, an engineer and an expert at the same time. No Imperial Department is necessary. But there should be a central demonstration factory as stated above. This factory should be a bureau of standards for the testing of manufactured articles by its experts and giving certificates, obtaining certificates for articles to be supplied to Government must be compulsory, and the Government should take those articles for which certificates have been obtained if the price be reasonable. As there is no antidumping legislation in India preference should be given to Indian manufactures though the quality may be inferior. There should be a library attached to each demonstration factory and scientific and industrial journals should also be subscribed, these should be available to the public.

General.

The tea and other industries in Assam stand in different positions in regard to freight and price of coal. Government should see if it is possible to place all the Industries in the same position.

I am now running an electric plant and I think with a little Government help a business of supplying energy can be developed and all the towns of Assam can be electrified. This will give employment to many youths and facilities to small capitalists to run small mills. In time an industry of the manufacture of electrical goods may be developed.

ORAL EVIDENCE, 7TH JANUARY 1918.

Sir F. H. Stewart.—*Q.* You give us some of the interests in which you are engaged in 1st paragraph of your written statement. Are you a businessman by profession?—*A.* I am not a businessman but a pleader. I am director of a joint stock company.

Q. That is the company to which you refer in your statement?—*A.* Yes. It is the Assam Valley Trading Company.

Q. What is the capital?—*A.* One lakh.

Q. When was it started?—*A.* We started it as a private company in 1894 and registered it as a joint stock company in 1896.

Q. Has it been paying dividends?—*A.* Yes.

Q. What stort of dividends?—*A.* We pay now nine per cent. We earn about fifteen per cent.

Q. You are a director. Are you the managing director?—*A.* There is no managing director, but in fact, I am the managing director.

Q. You are running an electric plant for lighting the town of Tezpur?—*A.* Yes.

Q. Has that been a successful enterprise?—*A.* My son is a mechanical engineer and he is working it and something is left as a margin.

How'ble Sir R. N. Mookerjee.—*Q.* Are you giving light direct?—*A.* It supplies light to the bazars and to the people who want it and we charge.

Q. Has Government fixed any rate which you are entitled to charge?—*A.* No.

Q. You are at liberty to charge any rate you like?—*A.* Yes, but I charge at the rate of eight annas per unit.

Q. You give light to the public and Government has not interferred with you?—*A.* Government has given me permission.

Q. To charge any rate you like?—*A.* Government has not fixed a rate. I can charge any rate, but I charge eight annas a unit.

Q. How many houses are lighted by your electric plant?—*A.* The whole bazar and some private houses.

Q. And you carry poles through the public streets?—*A.* Yes.

Q. And you have got permission for that?—*A.* Yes.

Q. And Government has placed no restrictions?—*A.* No, except that the plant is inspected by the Inspector of Electricity. He sent a man the other day to inspect the plant.

Q. Is there any Electrical Engineer under the Assam Government?—*A.* There is one Electrical Engineer for Assam, Bengal and Bihar and Orissa.

Sir F. H. Stewart.—*Q.* Is the rice mill which you mention in your statement as one of your private concerns prospering?—*A.* Yes.

Q. Have you any special knowledge of the weaving industry?—*A.* I know weaving.

Q. You are a practical weaver yourself.—*A.* Yes.

Q. Have you any association with any co-operative societies?—*A.* Yes with a co-operative society at Tezpur but that has nothing to do with the weaving industry.

Q. You propose the establishment of a demonstration factory in Assam. Where would you put that?—*A.* In some central place,—I think in Gauhati.

Q. Communications in Assam are very difficult and would it be easy for people to come from other parts of the province and see that demonstration factory?—*A.* Yes.

Q. Do you think they would do it?—*A.* Yes.

Q. Would that be better than travelling demonstrations with simple looms?—*A.* I do not think that will be possible. If we have a demonstration factory we must have engines and power looms.

Q. You wish this demonstration factory to be a power loom factory?—*A.* With both power loom and fly shuttle hand loom.

Q. In Assam, weaving is a cottage industry?—*A.* Yes.

Q. And you want to preserve it as a cottage industry?—*A.* It is not paying commercially.

Q. Do you think that it is bound to die out?—*A.* I think so.

Q. Because of the competition of the power loom?—*A.* Yes.

Q. Really what you want to see in this province is power looms?—*A.* Yes.

Q. And central factories?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.* Is your electric plant driven by steam power?—*A.* Yes.

Q. No hydro-electric power?—*A.* No.

Q. How do you get coal?—*A.* I get Assam coal. It is very expensive. This year the price is ten annas and six pies per maund and the cart hire comes to six pies and therefore eleven annas is the price of a maund. Considering the shortage in weight and also the presence of sand and stone and moisture the price comes to about one rupee a maund.

Q. You do not burn wood?—*A.* It is not available. There are no transport facilities and the Forest duty comes to about eight annas per cartload. There is no forest close by.

Q. Did you apply for permission from Government when you began to supply electricity outside your own house?—*A.* Yes.

Q. You get permission from Government to do so?—*A.* Yes.

Q. Before you supplied them?—*A.* Yes. Without the permission of Government I could not do that under the Electricity Act.

Q. Were you given any license?—*A.* There are two sorts of permissions—regular license and simple permission. I do not pay anything to Government. This concession Government has given me.

Q. You must work under certain rules and regulations?—*A.* I am bound by the Electricity Act and the rules framed under that Act.

Q. You actually applied to Government and got permission before you supplied electricity to people?—*A.* Yes. If I did not do it it would be an offence.

Q. In that permission Government did not fix any limit as regards what should be your charge per unit?—*A.* No.

Mr. A. Chatterton.—*Q.* What is the capital invested in this electric plant?—*A.* About Rs. 14,000.

Q. How many lights have you got running?—*A.* I cannot say the number of lights, but the peak load is about 10 kilowatts.

Q. You told Sir Francis Stewart that you wanted the handloom weaving and the associated cottage industry abolished and that you wanted to prepare the way by introducing factory organisation?—*A.* Yes.

Q. Why?—*A.* Because handloom industry is not very profitable. There are few Julahs whose earnings exceed ten rupees a month each, while an unskilled labourer earns seven to eight annas a day.

Q. They are weaving cotton cloth?—*A.* Yes.

Q. But up here most of the weaving is in silk?—*A.* Both cotton and silk.

Q. But most of it is in silk?—*A.* It is only in Kamrup that most of it is in silk.

Q. There are lots of cotton weavers?—*A.* They do not sell. They make for themselves.

Q. You suggest that Hattersley's or Raphaels' hand looms should be introduced. Have you any practical experience in working them?—*A.* I have got a Hatterley's loom and a friend of mine in Tezpur has got a Raphaels' loom.

Q. Do you keep them regularly at work?—*A.* I could not work because hand made warp was not suitable for Hattersley's. We could not make satistactory warps in Tezpur.

Q. What kind of warps could you make in that place?—*A.* We had Hattersley's warping apparatus, but we could not make good warps.

Q. So you recommend looms although you have not given a proper trial to them?—*A.* I have given a proper trial. I had some ready made warps from England and I tried them and they were very good. I made warps myself and the breakage was tremendous.

Q. Do you find that the Assamese weaver can work these mechanical looms.—*A.* Yes. They are not complicated. They may require supervision.

Q. Are you working these two looms now?—*A.* No.

Q. How long did you work?—*A.* One loom had been working for three years and another for one year. Then we gave them up. It was not profitable to work with hand made warps.

Q. You recommend after three years' experience that somebody else should take them up?—*A.* That is why I suggested that mill made warps should be supplied. I wanted to have ready made warps but I could not get any in India.

Q. Have you any experience of silk industry in this part of the country?—*A.* No.

Q. What do you mean by "sheet metal works with presses and other works that can be done without the use of prime movers and that require only small capital"?—*A.* Tea is manufactured here and if we want to sell it we must have tin boxes. We can also press utensils from brass sheets.

Q. You want a tin plate plant set up?—*A.* Yes.

Q. And presses?—*A.* Yes.

Q. Do you think you can press in machines worked by hand with a small capital?—*A.* I think not.

Q. It is merely a general expression of opinion?—*A.* Yes.

Mr. C. E. Low.—*Q.* You say you were making socks and stockings by power machines. Do you still do that?—*A.* We have given that up because we could not compete with Japan.

Q. Did you give that up before the war or during the war?—*A.* Before the war.

Q. Have you tried knitting silk on those automatic machines?—*A.* We tried Assam silk but we could not knit because the thread was not sufficiently uniform.

Q. Have you tried to get silk thread from Bombay mills?—*A.* No.

Q. The trouble here as regards silk is the irregular quality of the locally made thread?—*A.* Yes.

Q. I have observed that the weavers use Assam waste which has been spun up in the Bombay mills. You did not try any Bombay silk mill?—*A.* No.

Q. As regards the idea of getting mill made warps from the mills you know that the mills make only a large quantity of one kind of warp and they do not make a small quantity of each of the different kinds of warps. Can you give them a large order for uniform types of warps?—*A.* Generally we want warps for dhoties and sarees of short lengths.

Q. And they are pretty uniform?—*A.* Yes.

Q. What mills would you bring these mill warps from, from Calcutta?—*A.* Yes.

Q. Would your sizing keep good all the time?—*A.* Re-sizing would not be necessary, I think.

Mr. A. Chatterton.—*Q.* Have you tried it?—*A.* Yes, I got warps from England.

Q. What length?—*A.* 200 yards each.

Mr. C. E. Low.—*Q.* You say at the end of your note, "The tea and other industries in Assam stand in different positions in regard to freight and price of coal." Do you mean that railways or steamers charge lower freights for tea than for other articles?—*A.* All stores for tea gardens are charged two-thirds of the ordinary rate by the steamer Companies.

Q. And tea itself?—*A.* They have a special rate.

Q. What do you mean by ordinary rate?—*A.* The same article if it is meant for tea gardens is charged two-thirds of the rate which it would be otherwise charged. The same thing with coal. Coal is ordinarily sold at one rupee a maund, but if anybody has a big contract for coal, whether it is for tea or anything else, they supply coal at the rate of 0-10-6 per maund.

Q. One sees here that difficulties arise when somebody tries to encourage particular industries by special freight rates. Does tea go out at a lower rate than rice ?—*A.* The rate for rice is cheaper than that for tea.

Hon'ble Lt.-Colonel P. R. T. Gurdon.—*Q.* On the first page of your evidence you suggest the manufacture of matches, and then you say that there are various kinds of soft wood in Assam and with a little organisation a business for the manufacture of matches can be developed. Can you state which are those soft woods ?—*A. Simul, nim,* and *kadam.* I do not know the names of other woods. In forests there are other woods also.

Q. You say something about pine wood ?—*A.* Yes.

Q. Would you be prepared to put up a factory, say, at Tezpur if you got wood cheap ?—*A.* I have not got the capital. I made a reference and I got quotations from Germany and also samples of wood. I made also a reference to several match factories here and they are making no profit. The thing is that machinery for making boxes is very dear and it requires a very big capital. My idea is that in other parts of the world they are making a profit, and if we work on the lines suggested in my written evidence we may make a profit.

Q. You would not be prepared to put money into such a concern ?—*A.* I cannot put much. I have already got a business. If it gives a good profit I can take up another.

Additional written evidence submitted after oral examination.

No. 676, dated Tezpur, the 15th January 1918.

From—Rai Saheb MONOMOHAN LAHIRI, B.L., Chairman, Municipality, Tezpur,

To—The Secratary, Indian Industrial Commission.

With reference to your letter* No. 4517, dated the 10th January 1918, I beg to enclose a copy of the form of the agreement that has been entered into by the Tezpur Municipality with the Superintendent of the Reformatory School at Hazaribagh in respect of three boys apprenticed to the Municipality.

* Not printed.

These boys come under the Apprentice's Act XIX of 1850. They were licensed to the Municipality at first under the Reformatory School Code when they used to get Rs. 7-8-0 a month each from the Municipality for food and clothing and Rs. 1-8-0 from the Hazaribagh Reformatory School. During the period of apprenticeship which extends to the 21st year of the age of the apprentice, the Municipality increases the wages according to the ability of the apprentice.

Form of agreement.

This argeement made the day of in the year between of and of

Witnesseth that the said doth this day bind a boy of the age of years completed, son of the said (or otherwise describing the relation in which and stand) to dwell with and serve the said as an apprentice, from the day forth for years, during all which term the said apprentice shall duly and faithfully serve the said according to his skill and ability in all lawful business, and demean and behave himself honestly, orderly and obediently, in all things, towards the said and his family. And the said for himself and his executors and administrators, in consideration (of the premium or sum of paid by the said

If there is no premium the words between brackets may be omitted.

to the said the receipt whereof the said hereby acknowledges, and) of the faithful service of the said doth covenant and agree with the said his executors and administrators, that he will teach or cause to be taught to the said in the best way and manner that he can, the trade (craft or employment) of a during the said term, and will also during the said term, find and allow unto the said apprentice good, wholesome and sufficient food clothes, lodging, washing and all other things necessary, fit and reasonable for an apprentice, (and further, here insert any special covenants).

In witness whereof the parties have hereunto set their hands and seals the day and year above written.

WITNESS No. 402.

SRIJUT LAKSHESWAR BARTHAKUR, *Superintendent of Agriculture, Surma Valley.*

WRITTEN EVIDENCE.

I—Financial aid to industrial enterprises.

Capital.

Q. 1.—I have had some experience in trying to raise capital for a sugar mill on a modest scale in Assam.

The main obstacle was the absence of capitalist businessmen in Assam. Then comes the shyness of small investors to go in for anything new.

Q. 2.—There is very little capital in Assam for industrial purposes. The rich Marwaris, who practically control the trade in Assam, do not seem to have any inclination to industrial enterprises on joint-stock principles.

Thus the savings of the middle class are the only resources for capital. But they require very strong inducements to be drawn out for an investment.

Financial aid from Government.

Q. 5.—State aid in some shape or other is essential for infant industries.

(1) Money grants-in-aid may be useful in cases of such industries as require research and experiments for developing or adopting suitable methods, processes, etc.

(2) Bounties and subsidies with or without protective duties may be taken recourse to in cases of well established industries requiring some aid for foreign competition or for carrying on any improvement in methods or machineries.

(4) Loans, with or without interest, upon proper security should take the form of a first aid and should not be a bar to other forms of State aid. The principles of agricultural loans should be adopted for small industrial potentialities.

(5) Supply of machinery on the hire-purchase system does not seem to have any advantage in it, except when a pioneer or demonstration factory is handed over to a private party.

(6) The guaranteed purchase of products may be made in the cases of articles necessary for State use.

Q. 6.—In cases of (3) and (6), *i.e.*, guaranteed dividend and participation in share capital Government may have control in the management of the companies by appointing Government directors. In other kinds of State aid, Government may prescribe such standards of quality and quantity in output as will have the objects of State aid realised.

Co-operative Societies

Q. 12.—Co-operative Societies should be encouraged for the following :—

(1) Handloom weavers—

(*a*) Among Manipuris and Jugis in the Surma Valley and *endi* weavers in Assam.

(2) Wood turners of lac dye toys, tops, hooka stems, etc., in Sylhet.

(3) Iron-smiths in Sylhet.

(4) Bell-metal workers in Kamrup, Jorhat and Sylhet.

(5) Fruit growing industries in Sylhet.

As the classes of people concerned are backward there should be some effective Government initiative in organising and working up the Societies with substantial Government aid. High usury raging in the market and the encumbered economic condition of these people do not warrant any spirit of co-operation among themselves. And the help must come from outside either from the Government or from any financial agency.

II.—*Technical Aid to Industries.*

Q. 25. Certainly.

Industrial Surveys

The agricultural resources of the province should be surveyed as regards the following :—

1. The prospects of fruit growing, *e.g.*, the pineapples in Sylhet and oranges in Sylhet as well as the Khasia Hills, with special reference to export and preserving.

2. Improvement in the Sylhet fish curing industry and the possible utilisation of the waste offal for manurial purposes.

3. Export of hides and bones as to their bearings upon cattle diseases and the prospect of a bone-crushing mill in the Sylhet district.

4. Studies upon the quality of the available commercial oil-seeds of the province with a view to increase their oil contents.

III.—*Assistance in Marketing Products.*

Q. 28. Commercial museums are very useful institutions. But for a province like Assam they are too big things unless they form an appendage to an Educo-Economic museum with agricultural, industrial and other sections. Commercial Museums.

Q. 29. For a modest beginning Gauhati may be selected for a centre and the arrangement and the working may be left to the Commissioner.

Q. 30. It will not be practicable for the Government to undertake any sale operation. To help any minor and unorganised cottage industry Government may purchase some products to stock their museums and to supply samples to trade representatives in other centres and provinces. Sales Agencies.

Q. 31. Exhibitions are useful in their own way, specially for industrially advanced people. They should be more or less Imperial in character. Backward provinces like Assam are less likely to be benefited by them proportionately to their cost. On the other hand such provinces may more advantageously send out, at State expense, a large number of carefully selected representatives both official and non-official to visit exhibitions held in big cities. Exhibitions.

Q. 34. Trade representatives for whole of India may in time be necessary to represent India outside. But it is not the starting but the culminating point in view. The internal organisation should be developed first. Trade Representatives.

Q. 36. Yes, every province should have trade representatives in all important trade centres of India with which there are possibilities of trade connections.

Q. 37. Yes.

Q. 39. The co-operative movement should be developed so as to offer facilities in marketing indigenous products.

IV.—*Other Forms of Government Aid.*

Q. 56. Up till now there is none.

Q. 57 to 61. Leaving aside the tea and mining industries, this province appears to have very little room for an independent Director for Industries. Assam is primarily an agricultural province and her geographic position is not such as to develope manufacturing industries on any very large scale. Her industrial development shall have to remain inseparably connected with agriculture and her economic conditions necessitate an extensive co-operative organisation side by side with her agricultural and industrial progress. Such being the case the most effective arrangement will be to bring, if possible, all these three departments under one head. This officer should be assisted by expert deputies in the different departments. There should also be an advisory board constituted of both officials and suitable non-officials. This board over and above being an advisory one should have executive powers with budgetted funds on the lines of the Assam Local Boards. Official Organisation.

Q. 62. There should be an Imperial Department to correlate the separate activities of the various provinces as regards industries. Imperial Department.

Q. 64. This department should be in charge of an officer not below the rank of a member of the Executive Council of the Viceroy. It should be manned by experts whose duties will be to work in co-operation with the provincial industrial departments with a view to develope industries of both local and Imperial interest.

Q. 68. In Assam the provincial industrial organisation when created may take up the following, to begin with :— Work of Provincial Department.

(1) Making a thorough industrial survey,

(2) Collecting statistics,

(3) Developing financial facilities.

Q. 71. For the purpose of technical education there should be a pronounced Imperial policy and a system of general industrial education will have to be developed before any technological research institution can be taken full advantage of. Technological Institutions.

For this purpose India may be divided into four zones, say :—

(1) The eastern zone with Calcutta for its centre.

(2) Western zone with Bombay.

(3) The northern zone.

(4) The southern.

Each of these zones should be given a full polytechnical institution. They should make specialities of the major industries of their zones and have research facilities for the same. It will be better if these polytechnical institutions are affiliated to the Universities. The following courses should be provided in each of these institutions:—

1. Mechanical engineering.
2. Electrical engineering.

3. Mining engineering.
4. Applied chemistry—
   (*a*) Manufacture of chemicals.
   (*b*) Tanning.
   (*c*) Fermentation physiology.
5. Textile courses—
   (*a*) Spinning.
   (*b*) Weaving.
   (*c*) Dyeing and calico printing.
6. Ceramics—
   (*a*) Glass.
   (*b*) Porcelain.
   (*c*) Cement.
7. Minor industries of both chemical and mechanical nature, *e.g.*, matches, pencil, soap, celluloid, paper, etc.
8. Industrial economy and management of industrial establishment.

Transport facilities.

Q. 97 and 100. In the Surma Valley waterways play a very important rôle in the internal trade and it appears that there is ample room for their improvement. The water-borne trade of the Valley specially during the rains is quite voluminous. But very little attention is paid to this either by the Public Works Department or the local boards.

The improvements in the waterways from Theriaghat to Companygunj require special mention as a considerable portion of the Khasia Hill produce finds its outlet through this channel. The lime quarrying industry and the potato trade are calculated to be much benefited.

Q. 102. Nothing that I know of.

Hydro-Electric Surveys.

With more than 400 inches annual rainfall at Cherrapunjee and steep gradients on their southern slopes, giving rise to a number of rapids, the Khasia Hills appear to possess good resources for hydro-electric installations.

Forests.

Q. 105. With extensive new clearances in the virgin forests of Assam and consequent felling of valuable timber trees, it is strange to note that very little is commercially utilised. Possibly there is some defect in the forest regulations or more probably in the transport facilities. The most wasteful methods of clearing jungles by simply burning down everything require some investigations with a view to prevent any avoidable waste by encouraging destructive distillation of wood and the manufacture of wood tar, acetone, charcoal, &c.

Freights.

Rates of freight for goods of industrial and agricultural importance in the local and provincial railways as well as in the steamer companies should be so arranged as to stand as no barrier in the development of local industries.

New Industries.

Q. 113. Supply of raw materials in Assam warrants investigations with a view to develop the following :—

Match stick and pencil chips manufactures.

Paper pulp manufacture.

Agar wood distillation.

Destructive distillation of wood and acetic acid manufacture.

Citric acid manufacture from limes and lemons of the Khasia Hills and Darrang.

Starch making.

Fruit canning and preserving.

The assam silk industry.

Hand loom weaving.

Improved wicker work and cane and grass matting.

Improvement in the fish drying industry of Sylhet and utilisation of its waste products for manure.

Improvement in oil pressing by the use of hydraulic press and extraction through Solvents.

Bone grinding for manure.

Calcareous cement.

Hydro-electric installations.

Manufacture of calcium carbide and cyanamide.

ORAL EVIDENCE, 7TH JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* You are Superintendent of Agriculture in the Surma Valley?—*A.* Yes.

Q. Where did you learn agriculture?—*A.* I studied agriculture and agricultural chemistry in Japan and also studied sugar manfacture in Formosa, as a special training.

Q. Were you sent by Government or did you go as a private scholar?—*A.* I went with a scholarship from a private institution in Calcutta.

Q. Were you sent by the Scientific and Industrial Association, Calcutta?—*A.* Yes.

Q. How long have you been in Japan?—*A.* I had been there actually for four years.

Q. Since you returned from Japan, what did you do?—*A.* I tried to float a sugar company in the first intance and made some beginning as well, but for various reasons I could not make it a success.

Q. Did you actually start the sugar company?—*A.* I drew up a scheme and canvassed for capital.

Q. Do you mean the Gauripur Raja's company?—*A.* Yes.

Q. What is the real cause of that company not being promoted?—*A.* The first difficulty was capital. I travelled all over Assam. I went to some of the big zemindars of Bengal including the Maharaja of Kasimbazar and was promised some support; but I became disappointed later on as other difficulties cropped up.

Q. Your difficulty was mainly one of capital?—*A.* Yes; but that was not all. I got some promise of capital and with the assistance of the Raja of Gauripur and some other gentlemen I drew up a scheme and started planting sugarcane on a small scale to begin with. But the main difficulty came from the tea planters' opposition when the scheme was floated, to our securing lands on easy terms. I do not remember the details of the procedure, but somehow or other there was opposition, and some very severe conditions were proposed to be imposed by the Government.

Q. Since you formed your scheme there was opposition from the tea planters?—*A.* We applied for land from Government on a thirty years' lease. You know there is a special cultivation lease whose terms are very easy and favourable; and we asked Government to extend these special cultivation rates to sugarcane. There have been examples before of giving special cultivation leases for the cultivation of rice and mustard on a large scale and improved methods. But in this case they construed the rules very strictly and declined to accept sugarcane (on a plantation scale) as a crop for special cultivation but offered to recommend to the Government of India to make a special case of our application and give us land on a 30 years' lease subject to some special conditions. There were some four conditions laid down, but I do not remember all of them.

Q. There is no use telling what you don't remember. Do you mean that the Government of India did not sanction or was it the Local Government who did not grant concession?—*A.* We did not go so far as that: the conditions were so drastic that we did not dare to accept them.

Q. The conditions were laid down by the Assam Government and they were so hard and drastic that you could not accept them?—*A.* We were afraid that people would not come forward to put in their capital under those conditions.

Q. Was it because of those conditions that you could not raise money?—*A.* They scared away some would-be investors. At any rate they added to the difficulties in raising capital.

Q. What were those conditions?—*A.* The first condition was that the whole of the capital, namely two lakhs, should be subscribed. The next condition related to labour, namely, that we shall not employ or harbour or allow settlement of any labourer or his dependents who have been imported into Assam at the expense of any tea garden unless he has been in the province for four years without any advance agreement or bonus from any tea garden. (In other words, to be employed in the sugar concern he should be a man who has not received any advance or bonus from any tea garden for four years). This condition was a terror to us. Have you understood this?

Q. I have understood, but please explain.—*A.* It is this: the tea garden coolies are such that they live a hand to mouth life and cannot live, and nobody can expect them to live, for four years without getting a single rupee as advance (although worked for in due course) from any employer. That condition of remaining entirely free for four years before seeking employment elsewhere is not to be found in any other line.

Q. What is the third condition?—*A.* The third condition was that the company shall erect a fully equipped sugar refinery within three years of the lease.

Q. What was the fourth condition?—*A.* I do not remember the fourth.

Q. Are you in a position to give us a copy of these conditions or ask anybody who has got it to supply us with a copy?—*A.* I think the Raja of Gauripur has got the whole file.

Q. Will you write to the Raja of Gauripur? His Manager gave evidence before us in Calcutta, but I think he didn't go into any such detail?—*A.* I think you can get the details from Government* if you like.

Q. In which year was it?—*A.* This case is very well known. It was in 1911 and 1912 just after the reconstitution of the Government of Assam.

* The papers were subsequently placed before the Commission.

Q. That is why you could not raise capital for this sugar factory?—*A.* With the hope that we shall be able to raise the necessary capital and that we shall get the lease on easy terms we proposed this scheme. When we first approached the Chief Commissioner, Colonel Kennedy was here as Second Secretary. I saw him with some other gentlemen and they gave us all sorts of encouragement; but when it came to giving the lease, some of the tea planters objected; there was some discusssion in the Tea Association and correspondence with the Government in this connection; and after that as the result, it was proposed that if we accepted those conditions Government would be prepared to forward our application for land with recommendations to the Government of India.

Q. May I take it that the Government was first willing to give you reasonable terms, and after discussion with the Tea Association, who made objections, stricter terms were insisted on?—*A.* Yes. The first thing was not in writing. I saw the Second Secretary when we began our movement and I formed the idea that there will be no difficulty in securing land.

Q. He told you verbally?—*A.* If I had been aware of this attitude on the part of these tea planters or that Government would take such a view of their demands, I would not have wasted two years or so of my life in trying to float this company.

Q. You were promised verbally that you would get reasonable terms?—*A.* I was not promised, but their (Governments') attitude was very sympathetic in the first instance, but when they came to give land they laid down those conditions which I very strongly believe was due to the protest from the tea planters.

Q. Have you any written document to prove that this was due to the protest from the tea gardens?—*A.* One thing I can tell you, of course these are—

Q. I understand your difficulty because you are a Government servant now, but as you have come to give evidence you ought to support your statements by facts.—*A.* As I understand, the protest came from the tea planters, I know so much. When, with the hope that I shall be able to raise more capital and to do everything, I began a small sugarcane cultivation, with some Rs. 10,000 from several gentlemen, half of which was contributed by the Raja of Gauripur and was using some floating ex-tea garden coolies (who had not been attached to any tea garden), the planters objected to that.

Q. Then you took to Government service after you had been disappointed in this?—*A.* Yes, then I took to Government service.

Q. Then in your evidence under technological institutions you say you want technical colleges or schools for mechanical engineering, electrical engineering, mining, and so on, you have put down some six courses, but you do not seem to have provided for giving practical experience? *A.* I am speaking from what I saw in Japan.

Q. Have they not got practical training courses?—*A.* They have engineering shops and small manufactories attached to the colleges. These workshops belong to the institutes and they work for the institutes.

Q. In your answer to question 102 you speak of possibilities of hydro-electric installations in Assam. Is it a general observation, or do you know any particular places where water power can be produced?—*A.* It is a general observation strictly speaking. I was travelling at the foot of the Khasi hills and I saw several hill streams coming down with sufficient water-head.

Q. You didn't go into it thoroughly with a view to preparing a scheme?—*A.* It was not possible. I only compared those waterfalls with what I saw in Japan.

Q. Then in answer to question 105 you say "With extensive new clearances in the virgin forests of Assam and consequent felling of valuable timber trees, etc., etc."; have you got any definite plan or do you only suggest the possibilities?—*A.* My idea was derived from what I saw in Japan. There they manufacture charcoal from forest wood for their everyday use. In preparing charcoal they get wood tar and other things and they take these away and manufacture acetic acid. I saw a factory there doing all these things.

Q. That is what you saw in Japan, you have not gone into the matter thoroughly here?—*A.* No.

Q. Then you say "Rates of freight for goods of industrial and agricultural importance, etc., etc." Can you give us particular instances where you think these rates are hindrances to the development of industries?—*A.* I can cite one instance from my own experience. I manufactured some *gur* from that small cultivation I started. They have special rates for *gur* transport from Chittagong to Tinsukia side; that rate is 4 annas 4 pies per maund *vid* Chandpur. When I want to transport *gur* from Tinsukia to Chittagong side then their rate is 1-4-0 per maund Tinsukia to Chandpur in place of 0-4-4 which is the local rate. But if I want to transport to Dacca or some other place from Tinsukia it is 0-9-3 *vid* Chandpur. So I could not sell any *gur* in selected markets owing to the variations in rates. I sent some to Dacca and I had to sell it there because the freight was cheaper. I wrote to the railway authorities, but they paid very little heed to it.

Q. Is there any other instance which you can cite?—*A.* No, that is the only instance.

Mr. A. Chatterton.—*Q.* What area were you cultivating with sugar cane in your preliminary experiment?—*A.* When I started I planted 25 acres, and in the second year I planted 40 acres more, but the difficulty of capital came in and I could not keep up the whole thing,

I kept only 25 acres, that is, 50 acres (25 ratoon and 25 plant) in the second year; then the whole thing had to be stopped, so I had gradually to wind up this cultivation.

Q. What sort of crop did you get? How much per acre?—*A.* In certain places I was getting about 80 maunds of *gur* per acre.

Q. How were you crushing it?—*A.* With ordinary cattle power.

Q. In answer to Question 105 you speak of destructive distillation. Do you refer to agar wood distillation?—*A.* No. By destructive distillation I meant manufacture of charcoal, acetone, wood tar, etc. From agar wood a kind of essential oil is prepared by simple distillation in Sylhet. They manufacture it in a very crude way by placing ordinary big copper kettles over an open fire; in consequence of that the produce is of inferior quality. I thought some improved machinery might be used.

Q. What is done with the agar oil?—*A.* It is exported to Calcutta and Bombay first, then to Arabia, Persia, Turkey and Egypt, etc.

Mr. C. E. Low.—*Q.* With regard to these conditions which you were speaking of as applied to the sugar factory which you proposed to start, are similar conditions applied to people who want to start tea gardens?—*A.* No.

Q. Do you realise the trouble about the question of the enticement of labour?—*A.* Yes, I do.

Q. And feeling is aroused I understand by the suspicion that Indian concerns wish to entice the labour of European concerns?—*A.* Yes, there is suspicion, but they cannot stop a new tea garden using floating labour.

Q. Do they make it a condition that a tea garden newly started should join an existing association of employers who undertake not to entice one another's labour?—*A.* No, there is no such undertaking.

Q. Do Government insist on any new tea garden joining an association? Probably you do not know?—*A.* I do not know.

The Hon'ble Lt.-Colonel Gurdon here said that Government does not make such a condition.

Q Supposing Government did make a condition that you should import yourself a reasonable quantity of labour for your land purposes, would you have agreed to that?—*A.* We must have had to import; how can we depend upon floating coolies?

Q. Then supposing you had undertaken to import a certain amount of labour, that would have been a guarantee on your part that you did not intend to make a living by stealing other people's coolies?—*A.* Quite so.

Q. Would you not agree to a condition of that sort?—*A.* Yes, I should.

Q. With reference to your present work as Superintendent of Agriculture, what exactly is the nature of work going on in the Surma Valley? Have you got any agricultural farms?—*A.* Yes.

Q. What is the extent of the area?—*A.* About 80 acres.

Q. Who is in charge?—*A.* There is a farm manager.

Q. You are in charge of the demonstration work?—*A.* Yes.

Q. And of the farm?—*A.* I have not got anything to do with the management of the farm. The farm is directly under the Deputy Director.

Q. Then what do you demonstrate?—*A.* We demonstrate the effect of artificial manures and better seeds and better implements.

Q. What seeds are you demonstrating in particular?—*A.* Improved paddy seeds, jute seeds and others. We have been demonstrating these for the last two years.

Q. On the farm?—*A.* Yes on the farm as well as in cultivator's lands. In the farm we are growing them, but it is suited specially for paddy.

Q. Is it a good jute area?—*A.* Yes, we have some good jute soil in the farm. But paddy is the main crop and jute is of secondary importance.

Q. My point is this: are you demonstrating things which are shown to be good on the farm and are you getting the public to believe that the farm cultivation is good?—*A.* Paddy is the main object of the Sylhet farm but the results of the farm cultivation are not yet sufficiently advanced to advocate our own paddies. So we are till now recommending the Dacca seeds.

Q. Can you try other people's seeds on your farm?—*A.* Yes, we are trying that. We have got special lands for experiments in seed selection for paddy only, and experiments are carried out, but it is too early to expect definite results.

Q. Are you doing anything in the way of cotton at all?—*A.* No.

Q. Do you think cotton cultivation is any use here? Is long staple cultivation possible here?—*A.* Long staple cotton may be grown over the North Cachar and Garo Hills.

Q. I know the Garo hill cotton which has a staple of $\frac{3}{8}$th of an inch. Can you say whether long staple cotton is grown in any other place?—*A.* I have seen some long staple cotton grown in North Cachar hills.

Q. Have you any idea as to what sort of yield it gives?—*A.* We cannot form any idea because they grow all sorts of crops mixed up in *jhumming*.

Q. It is a sort of hill cultivation?—*A.* Yes.

Q. You don't think it is a business proposition?—*A.* The cultivation is so uncertain with these hill people that it has not come within the scope of regular cultivation.

Q. Is any research being done by any firm or by your Department?—*A.* We have not been able to do anything very much in the Surma Valley, but there is an Inspector for the Khasia, Jaintia and Garo Hills.

Q. You talk about examining the quality of available commercial oil-seeds of the province with a view to increase their oil contents: is any selection going on with reference to oil-seeds?—*A.* This year we are trying to introduce "bold type" linseed into the Surma Valley.

Q. Is it for oil or for flax?—*A.* There is no flax grown here; everything is utilised for oil purposes.

Q. There are I believe flax experiments going on here?—*A.* Not in the Surma Valley.

Q. Is anything done in the way of studying metabolism of the oil-seeds with a view to increase their oil-contents? Is any research of that kind being done here?—*A.* No, we have had no research in this line.

The Hon'ble Lt.-Colonel P. R. T. Gurdon.—*Q.* You are an officer of the Agricultural Department, aren't you?—*A.* Yes.

Q. Have you any experience of bone meal manure?—*A.* We have been demonstrating the use of bone meal with good results.

Q. Where do you obtain your bone meal from?—*A.* From Calcutta.

Q. You have a firm that supplies it?—*A.* Messrs. McKillican and Company supply us.

Q. Would it be possible to manufacture bone meal in the province of Assam?—*A.* I think so.

Q. Are bones readily available?—*A.* There will be a sufficient amount of bones for one or two mills.

Q. Where, in the Surma Valley?—*A.* Yes. There water transport is very convenient and cheap too.

Q. What about the Assam Valley?—*A.* In the Assam Valley I think it will be very difficult because there are no transport facilities. I mean cost of carriage of the raw materials will be prohibitive in the Assam Valley.

Q. How do they collect bones?—*A.* There are a set of people who collect bones from different places and carry them away to Calcutta.

Q. What sort of people are they?—*A.* They are I think low class Mahomedans.

Q. Would you not be able to get such people in the Assam Valley?—*A.* It will be difficult.

Q. In the Surma Valley you could get such people?—*A.* It will be easier in the Surma Valley.

Q. Do you think it will be any good starting a bone crushing factory say at Sylhet or some other central place?—*A.* It will be better to start it at a place near Ajmiriganj for instance, but the site has to be investigated.

Q. What other manures do you use?—*A.* We are using oil cake.

Q. Where do you get that from?—*A.* Locally.

Q. Is that easily obtainable?—*A:* Yes.

Q. Have you depôts for the supply of oil cake in different parts of the province?—*A.* No, we have got no depôts.

Q. Who supplies oil cake?—*A.* We purchase it from the *telis*.

Q. The Agricultural Department, I understand, supplies it?—*A.* The Agricultural Department have got a seed depôt here at Gauhati, but it will be too costly to get manure from this place.

Q. What about the Surma Valley, is there any depôt there for the supply of oil cake?—*A.* There is no depôt there.

Q. Or for any other manure?—*A.* There is no depôt.

Q. The ryots if they wish to obtain manure have to purchase it from Calcutta, is it so?—*A.* They only use oil cake in small quantities and they get it locally.

Q. What do the planters do?—*A.* They get it from Calcutta.

Q. Could it not be arranged to supply it locally?—*A.* Yes, if a bone meal factory is erected we can supply bone manure to cultivators locally. But I do not think there will be enough of the produce to meet the demands of the tea planters too.

Q. And other manures too?—*A.* For other manures such as oil cake it will be quite easy to supply the needs of the cultivators if we have a seed depôt and stock oil cake there.

Sir F. H. Stewart.—*Q.* In what years were you in Japan ?—*A.* From 1905 to 1909.

Q. Where were you ?—*A.* I went to Tokio first and remained there for five months ; then I went to the Agricultural College at Sapporo.

Q. Did you have any trouble in getting admission into the college ?—*A.* No, I did not have any trouble in getting admission into the agricultural college, but it is difficult to get admission to other colleges such as those which give engineering and industrial courses.

Q. Is there any trouble about admission to the chemistry course ?—*A.* No. But as a rule the number of seats are limited : but they show some consideration to foreigners.

Q. Where is your home ? Do you come from Assam or Bengal ?—*A.* I come from Assam, from the Sibsagar district.

Q. Which company were you trying to raise capital for ?—*A.* For a sugar factory.

Q. Was that to be an Assamese company ?—*A.* I wanted to start it with the people of Assam, but we did not want to restrict it to this province alone.

Q. Do I understand that the conditions which Government laid down in writing were much stricter than those you had been led to expect from conversation with Government officers ?—*A.* Yes.

Q. The first of those conditions refers to the amount of capital. You were trying to raise two lakhs of capital, and Government made it a necessary condition that that should all be paid up ?—*A.* Yes.

Q. Is not two lakhs capital a very modest sum on which to start a factory ?—*A.* We wanted to start on a modest scale.

Q. But would it be safe to try to start such a factory with less capital ?—*A.* I think we should have required the whole amount.

Q. You could not get that condition waived on the part of Government ?—*A.* Of course, if they viewed it in that spirit it is all right, but the other conditions were such that even, if we had been able to find the capital, we would have failed to comply with them.

Q. Is it not true that the real reason why you failed to start the factory was that you could not get the capital ?—*A.* We looked at the matter from this standpoint. We wanted land from Government first and then we wanted to raise the capital. In Assam we have not got big capitalists, so we have to depend upon middle class men : and if Government had taken some interest and given this land on favourable terms, then it would have created some faith and we could have induced people to put money in it. That was our standpoint ; but, when these conditions were harsh, we gave it up as some people actually got afraid.

Q. But don't you agree that it would have been a very unfortunate experience for the province if the factory had been started with too little capital and had failed ?—*A.* It would not have done harm if I had not got the whole amount of two lakhs or very nearly so. I mean even if it was 4,000 or 5,000 less that would not have mattered ; but if I did not even get one lakh, a half at least, I would not have ventured to launch forth.

Q. How much did you succeed in collecting ?—*A.* I secured promises for Rs. 65,000.

Q. How much actually paid up ?—*A.* The amount was promised in respect of the Sugar Company and as the company was not registered we had no need of calling up the amount. In the meantime, while negotiations were going on with Government, I raised about Rs. 10,000 amongst a few friends and started the small sugar plantation which we wanted to make the nucleus of the proposed company but which we had to give up afterwards.

Q. With reference to the question of labour is not labour one of the chief difficulties in the way of the development of industries in Assam ?—*A.* Yes.

Q. When Government wanted to impose this condition did you say that you were prepared to import your own labour ? Did you put that as a specific proposition ?—*A.* No, we did not, because it did not come to that as we objected to the principle of making special conditions in our case while other industries, *e.g.*, tea, are unhampered with any such conditions.

Q. With reference to your answers to questions 57 to 61 you say, apart from the tea and mining industries, this province appears to have very little room for an independent Director of Industries. How do you reconcile that with your answer, especially to question 113 ? Would not those industries afford plenty of scope for a Director of Industries ?—*A.* In the latter part of that paragraph I have given my suggestions.

Q. Your suggestion might be more definite. Would not a Director of Industries be the right man to do all that ?—*A.* Yes.

Q. Don't you think he will have plenty to do to go into the industrial problems of the province, and so on ?—*A.* I have suggested that co-operative societies might do that.

Q. There is a Director of Agriculture here already, is there not ?—*A.* Yes.

Q. Is he not a very busy officer ?—Has he not got plenty to do already ?—*A.* Now the Director of Agriculture has got to do land records work as well. Our difficulty is about capital and I should be very glad if the co-operative department also is associated with the industrial movement.

Q. What you really mean is that it would be too much work for one man and you would like to see these three officesr, the Registrar of Co-operative Societies, the Director of Agriculture, and the Director of Industries to be associated in a combined department, is that right?—*A.* It will not be impracticable if he is assisted with expert deputies.

Q. Then you say for the purposes of technical education and research India should be divided into four geographical zones, etc. Would it not perhaps be better if you had a number of industrial research institutes divided according to groups, say, the chemical institute in one place, metallurgical in another, and so on?—*A.* My idea is to supply all the different branches of technical education in one institute which should make specialities of the major industries of its zone, where they will have practical facilities for studying them.

Q. Hon'ble Sir R. N. Mookerjee.—In connection with your proposed sugar company you strongly believe that if Government had given you reasonable terms you would have been able successfully to float the company?—*A.* We hoped so.

Q. Also you would have no cause to entice labour from other tea gardens?—*A.* Yes.

Q. You said that one of the conditions laid down by Government was that any coolie who had received during the previous four years any advance from any tea garden should not be employed by you, and it was very impracticable and could not be carried out: otherwise, you were hopeful of working your factory with success?—*A.* No, it was not quite impracticable. But, on principle, I do not quite see why a coolie after having served in a garden for 4 or 5 years should not be free to go and serve another man. But for these strict conditions I think we could have worked out our scheme.

Q. You think that is very unreasonable?—*A.* I think so.

Hon'ble Syed M. Saadulla.

WITNESS No. 403.

THE HON'BLE SYED M. SAADULLA, M.A., B.L., *Pleader, Judge's Court, and Member, Assam Legislative Council, Gauhati.*

WRITTEN EVIDENCE.

I.—Financial Aid to Industrial Enterprises.

Capital.

Assam is a poor province. There are no monied men worth the name, nor are there any landed aristocracy. Hence there is hardly any hoarding which can be converted into liquid capital. Capital, if ever found, will be small collections from the poor middle class whose savings are naturally smaller. I once tried to raise a small capital to run a washing soap industry at Gauhati, but I failed to realise even the small capital that was needed. The difficulties are manifold:—(1) people are reluctant to part with their small savings in an enterprise of which they have no idea and are not cognisant of its ups and downs; (2) the rate of interest being generally very high here, ranging from 18 to 60 per cent per annum, people generally find money-lending more lucrative, and a surer business than investments in other industries; and (3) the collapse of a few joint stock companies started in these parts for pressing mustard oil, etc., has proved a dead block to any new enterprise.

Industrial banks.

The only way, in my opinion, to raise capital is by establishment of industrial banks in this province, under the supervision and control of Government, wherein Government should purchase some shares. Government connection and control will ensure credit and money will flow in and even those planters who deposit their money in Calcutta banks will divert the same to the industrial banks. These banks should work on the co-operative principle.

Government aid.

So far as my province is concerned I am almost sure that, without Government aid, no new venture will be attempted. The nature of Government aid ought to be different for different kinds of industrial opening. Guaranteed dividends for a limited period will be necessary for smaller industries, while loans and supply of machinery and plant in case of bigger ones; and guaranteed or preferential Government purchase of products for both. While another branch of industry connected with the Government forest reserves will require Government help in the shape of exemption of tax or royalty on any article used in the industry.

I think Government assistance in audit and direction will be required for all sorts of financial aid by Government to industries excepting the methods No. 7 in question No. 5 of the printed list.

Pioneer factories.

I am against Government establishing any pioneer factories in Assam for our people are too poor and too uneducated to profit by the same. Government has established a few demonstration farms in Assam which, in my humble opinion, have done no good to the country.

Co-operative societies.

Co-operative societies, if organised on a big scale, can supply capital to small industries and, to my mind, they are admirably adapted to encourage cottage industries, which are almost indigenous in all Assam households.

The limit of Government assistance which I propose is that Government aid should only be given in cases of local Indian concerns, for it appears that there is no dearth of capital for companies started in Great Britain or even in Calcutta. Limits of Government assistance.

II.—Technical Aid to Industries.

Assam is essentially an agricultural country. Ninety per cent of her population, if not more, depends upon agriculture as the main industry. Government would do well to establish a model demonstration factory in some suitable centre to show the up-to-date implements of husbandry, to exhibit the treatment of the soil and the use of manures, and the system of improving seed grains. Along with it there ought to be classes wherein the ryot's children can undergo a course of lessons and lectures in scientific agriculture. Demonstration factory.

This factory should also possess one or two experts to teach the apprentices various arts and handicrafts which require only a small capital to start with. What I mean is this. There is ample room for a small industry for canning the various fruits—oranges, lemons, citrons, pears, etc.,—that are abundantly grown in Assam. A slight knowledge of the chemistry of preserving fruits, extracting juice, and making syrups, jams, etc., may be turned to a lucrative beginning in this industry. The canes of Assam may be utilised for wicker work by a knowledge of technical design. Examples can be multiplied, but I refrain from putting them up. If some technical education could be given in the demonstration factory then it will be a great help to the Assamese to take to small industries. Training of apprentices.

III.—Assistance in Marketing Products.

I have not much faith in commercial museums for the simple reason that our people are not yet qualified to grasp the real spirit of the museums. What is wanted more is a commercial emporium for bringing the seller and buyer together "for the sale, as well as the display, of the products of minor and unorganised cottage industries". They should be developed, on the co-operative principle. I would not vouch for exhibitions for, though they would give ample facilities for social intercourse, yet they would fail in their principal utilisation of imparting industrial stimulus to the people. Backwardness in education, and especially want of technical knowledge, would deprive people of getting full benefit from these exhibitions. Commercial museums. Exhibitions.

Government, in order to patronise Indian industries, should give the people a chance of knowing its requirements and this could best be done by publishing lists of imported articles and also exhibiting samples of them in the emporia so that Indian industries may work up to the necessary finish. Government publications.

Government stores should never be purchased out of India unless and until the same cannot be supplied in India. For this purpose Government should notify its requirements in the *Gazettes* and also in the papers of India. Purchase of stores.

I think banking facilities for marketing indigenous products can be best obtained by co-operative credit and industrial banks. Banking facilities.

IV.—Other Forms of Government Aid to Industries.

To those concerns for whom I advocate Government aid in matter of finances Government-owned raw products should be given entirely free for a definite number of years and to others they may be given on favourable terms. Raw products.

The land policy of Government is a check to our industrial development. The recurring settlements, with their continually increasing assessment, the want or absence of occupancy rights of the ryots, and the auctioning of Government lands required for industrial purposes, all tend to check our attempt to improve our agriculture, which is the main industry of the people. Land policy.

Government should allow the use of subterranean or surplus surface water for industrial purposes if they do not interfere with the irrigation and communication of the people. Surface water for industrial purposes.

V.—Training of Labour and Supervision.

Lack of primary education hinders industrial development for it affects the labour question greatly. Labourers' skill and efficiency can be greatly augmented by primary education and also by giving them a course of handling machinery, etc., in the model demonstration factories proposed, and they should be allowed to specialise if any of them show an inclination or adaptibility to a particular machinery or a special branch of industry. Skill and efficiency of labour.

Establishments of industrial schools in our province is a long-felt want but, in my opinion, a mere theoretical learning will not improve matters and, as such, these schools should be attached to the model factories, where students could be apprenticed and undergo practical training. Night classes may be advantageously established for improving labour. Industrial schools.

VI.—General Official Administration and Organisation.

Official organisation.

So far as I am aware there exists no official organisation in Assam for the development of industries. It has been proposed and sanctioned by the Government of India to appoint an officer in the post of Director of Industries. I do not advocate the creation of a board of industries for our province, but there should be a special officer under the director to organise and encourage cottage industries. The principal cottage industry which I recommend is the Assam silk, *endi* and *muga*, and the cotton industry.

Government experts.

In my opinion there should be a Government expert attached to each sub-division of a district who would visit the principal centres of cottage industries, help the people to co-operate for the purchase of improved power-looms, and also correspond with the commercial emporia to exhibit and sell the finished articles. In short, he will create a demand and then see to its supply. He should also teach the people how to rear silkworms on scientific methods and also introduce improved breeds. He may be required to work as a go-between of the actual workers and the industrial banks proposed. He should be the medium of approaching the people by the Department of Agriculture or Sericulture.

Director of Industries.

In my opinion the Director of Industries should be a business man with some degree of technical knowledge, but his principal qualification should be his capability to mix and converse freely with the actual workers in the different branches of industry.

VII.—Organisation of Technical and Scientific Departments of Government.

Technological institute.

I do not think there is any department which is capable of giving assistance to industries in our province. There should be a technological institute for each province where applied chemistry, applied physics, and applied mathematics may be taught to fit the citizen for industrial work and development as is done in all European countries, as well as in Japan and America. One central high research institute for all-India would do at present. A college of commerce may be added with the provincial technical institute just proposed.

College of Commerce.

Industrial and commercial education.

Local boards and municipalities can assist in promoting a desire for industrial or commercial education by starting their own factories and training a number of apprentices who may ultimately supply labour to industries opened.

VIII.—Government Organisation for the Collection and Distribution of Commercial Intelligence.

Dissemination of industrial information in the vernaculars can be done by the expert for each sub-division which I have proposed.

IX.—Other Forms of Government Action and Organisation.

Transport facilities.

Lack of transport facilities by road, rail, or water hinders trade, and hence industrial development, in the province greatly. For example, the prohibitive rate of freight for motor transport between Gauhati and Shillong, Rs. 3 a maund, is a check on the great potato trade of the Khasi Hills. I think railway extensions are necessary in our province for the development of trade and industry.

X.—General.

Raw material.

Government can do a lot in improving raw material, *e.g.*, cotton, silk, and sugarcane. I understand Government tried to rear silkworms in Shillong, and a demonstration farm that sugarcane can be profitably grown on a commercial scale has been in existence at Kamrup district for about two years. Government can also introduce the long-staple cotton from other places. But to realise full success from these farms people should be taken into confidence, and the improvements in machinery, growing, and other subsidiary subjects should be explained to the people. It is no use entertaining highly paid unapproachable staff; only the expert, with Indian assistants, should be entertained in such farms.

ORAL EVIDENCE, 7TH JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* You say in the first paragraph "The collapse of a few joint stock companies started in these parts for pressing mustard oil, etc., has proved a dead block to any new enterprise". Can you give us any reason for the failures?—*A.* There are various reasons. It was partly due to the dishonesty of some of the partners, but mainly on account of want of power of competition against Marwari firms. These use all sorts of seed to increase the quantity of oil, whereas this company was started by some of the leading local pleaders who did not want to adulterate it. They could not compete with Marwari traders and with the imported oil.

Q. In the next paragraph you say "The only way, in my opinion, to raise a capital is by establishment of industrial banks in this province, under the supervision and control of Government, wherein Government should purchase some shares". Have you any idea what should be the capital of the bank?—*A.* I think we could start with 50 lakhs.

Q. What help would you want from Government if you started a bank with 50 lakhs ?—*A.* Government should take at least one-fifth of the shares.

Q. You think the balance of the money will come from Assam ?—*A.* Yes.

Q. In the first paragraph you say you have no money and the people are very poor ?—*A.* In that case the European planters who generally deposit their money in Calcutta banks will divert their savings to this bank if it is under Government.

Q. Where would you locate your bank ?—*A.* It must be in some trade centre.

Q. In Assam have you got in your mind any particular suitable place you can recommend ?—*A.* I think Gauhati would be the best place because it is the centre of all the different routes and also carries a large amount of trade.

Q. In regard to the training of apprentices you say "This factory should also possess one or two experts to teach the apprentices various arts and handicrafts which require only a small capital to start with". What about their education : they must have some sort of education ? If they only get practical training they would not be competent to hold positions as supervisors, or managers, or foremen of mills ?—*A.* There will be no dearth of students in that line.

Q. If they go to factories at what age do you think they should enter ?—*A.* Not before 18 years.

Q. For how many years do you want them to go to a factory ?—*A.* Three years.

Q. You think 3 years sufficient for them to get a competent training to become foremen ?—*A.* To become foremen they might stop another 3 years.

Q. Are there any factories in Assam where they can get a proper training ?—*A.* Not that I know of at all, except that there are a few stipend holders from the Williamson Artisan Fund attached to the Railway Workshops at Jorhat.

Q. In the last page you say "Local boards and municipalities can assist in promoting a desire for industrial or commercial education by starting their own factories and training a number of apprentices who may ultimately supply labour to industries opened". Are your local boards so rich as to start factories ?—*A.* No, there was a conference with regard to improving our communications, and it was suggested that two or three boards should combine and have engineers and a competent staff.

Mr. C. E. Low.—*Q.* What experience have you had in floating or dealing with industrial concerns ?—*A.* As I have said, not much practical experience. There was a concern called the Kamrup Industrial Company. It was sinking. I was asked to be director for 2 months. I was director and from that experience I can speak. I also wanted to start, as I have said, a washing soap factory with Rs. 25,000 capital, but could not get the money owing to the apathy of the people. They saw that joint stock companies were not working well, and one or two collapsed, one at Gauhati and the other at Dibrugarh.

Q. Why did you think of a soap factory ; was it on account of the oil mills ?—*A.* Because in this ordinary washing soap they use lime as a saponifying agent and we can get lime here in any quantity.

Q. You also want oil for it ?—*A.* This ordinary oil would not do ; we would have to use fat and grease. On account of the lime only I wanted to start here. We could also adulterate it, if possible, with some herbaceous products, such as *rita*, used for washing flannels. *Rita* is grown abundantly in the jungles.

Q. Have you got the idea worked out as to how you are going to make the soap, to combine the materials ?—*A.* We would have to take the help of experts. The Dacca people are experts in these matters, the indigenous soap manufacturers.

Q. You say "Government has established a few demonstration farms in Assam which, in my humble opinion, have done no good to the country". Why do you think they failed : in what respect ?—*A.* The first that I have in view is the sugarcane farm at a place called Khagrabari. It is far off from the neighbourhood of any locality and, moreover, it is on such a big scale that no ordinary ryot can think of competing with it, or get any benefit from it.

Q. That is not meant for the benefit of the ryot, but to try and show that sugarcane can be grown here on a big scale, in order to get a sugar factory. Are there any farms which help as demonstration farms for ryots ?—*A.* There is one at Jorhat ; and there was another at Shillong. I don't think many people are benefiting by them.

Q. They don't have small plots cultivated, either hired or borrowed from the cultivators, which are cultivated under the guidance of demonstration workers ?—*A.* Yes.

Q. Do those do any good ?—*A.* That does not do any good because nobody takes an interest, nobody goes there. Jorhat is more than 24 hours' journey from here. An ordinary ryot would not go and look, and one day's looking would not do.

Q. What about the people around Jorhat : do they go to it ?—*A.* So far as my information goes they don't go to it.

Q. Why ? Because it is not made known to them or, if they go, do they think the thing is not well done ?—*A.* It is due to want of education. They don't know the value of different scientific manures. Sometimes these don't appeal to them. In regard to the use of fertilisers they cannot afford to put their savings into them.

Q. In many other parts of India uneducated ryots are taking advantage very largely of these things?—*A.* So far as my opinion goes these demonstrations are not doing any good, to people in general at least.

Q. Is that owing to the lack of technical staff?—*A.* There is technical staff.

Q. You say "Government would do well to establish a model demonstration factory in some suitable centre". Why do you think that would succeed when the demonstration farms have failed?—*A.* In my note I say the ryots' children should also be taken as apprentices. In the present demonstration farms there is no provision for apprentices nor for the ryots' sons.

Q. They don't give short courses on any of these farms for improved forms of agriculture as they do in other provinces?—*A.* No.

Q. You have heard of the system of short courses in other provinces?—*A.* Yes, I have.

Q. You speak of the auction of Government lands required for industrial purposes as a check on agricultural improvement. Is that auction carried on as a regular practice?—*A.* Yes.

Q. For what?—*A.* For special cultivation. The Assamese people, the children of the soil, are not going in for tea cultivation on a large scale on account of the competition of European planters. The present law is that whoever wants land for any special cultivation should apply to the Deputy Commissioner. That must not be for more than 600 acres. Along with his application he must deposit survey fees of 8 annas per acre. He has also to clear the jungles, pay forest valuation of the timber, and other things. He has to spend a lot without knowing whether he will get this land. Then it is advertised for sale, and anyone can put in their claims, or anyone who gets scent that so and so has applied can come and bid for the land. The one who comes in subsequently gets the advantage of the initial outlay of so many thousands.

Q. Is that outlay not refunded?—*A.* Yes, some time later on. All these operations take a couple of years, and all that money is locked up, and he cannot get any interest upon it.

Q. Is no special consideration shown to the local people, the Assamese?—*A.* Not that I know of.

Q. They don't reserve certain areas for Assamese and let them have it on fixed terms without auction?—*A.* No.

Q. Have any Assamese gentlemen taken up land on these special cultivation terms?—*A.* Some have purchased old gardens and some have opened out with great difficulty but many have failed to get land.

Q. You say "In my opinion there should be a Government expert attached to each subdivision of a district who would visit the principal centres of cottage industries, help the people to co-operate for the purchase of improved power-looms, and also correspond with the commercial emporia to exhibit and sell the finished articles". What power would you have them run by; steam, or electric, or what?—*A.* That would depend on the number of people and the cost of the machinery. About 10 miles from here the people are noted for their manufactures. Everybody uses ordinary looms. If all the people could combine and co-operate then most probably steam power could be used.

Q. Those that we saw were working at a very slow rate which, unless they change their system of working altogether, would not be suitable for power. You suggest that they should also have improved looms?—*A.* Yes, the fly-shuttle and automatic shuttles.

Q. What they apparently want is the Jacquard loom. You cannot work it quickly with any other system, not quickly enough to have power. The man I saw was only doing about 8 picks per minute?—*A.* That is what I have been complaining against. There is a wastage of energy, as well as time.

Mr. A. Chatterton.—*Q.* Do you want co-operative societies for any other industries than hand-loom weaving?—*A.* We have a crude system of pottery. If the potters could co-operate I think they can utilise present methods.

Q. Where would they get a market?—*A.* If they can produce improved tiles we could use them. Generally, we use Mangalore and Dacca tiles. Now that the cost of corrugated iron sheets is prohibitive these good tiles could have a ready market.

Q. You say "There is ample room for a small industry for canning the various fruits"?—*A.* For the preservation of fruits in the Khasi hills which are full of oranges, pears, etc. We have to sell them at once, otherwise they get rotten. If these could be canned I think a small industry could be run.

Q. Where would you get the market for your products?—*A.* They could be sent to Calcutta and also sold locally.

Q. Would there be a market in the case of a small canning industry? People generally buy canned fruit which has some reputation. It is generally carried on on a big scale?—*A.* Therefore, I say Government aid should be in the form of guaranteed dividends, some sort of financial aid, and, if Government give a guaranteed dividend for some time, we could compete with others.

Q. Do you grow fruit on a sufficiently large scale to start such factories at the present time?—*A.* On a very large scale on the Khasi hills; there are miles and miles of orange groves.

Hon'ble Lieutenant-Colonel P. R. T. Gurdon.—With regard to your answer in connection with demonstration factories do you think there is an opening for a Government rice farm in the Assam Valley?—*A.* Yes, if Government would take any apprentices.

Q. Rice farms for improving the methods of cultivation and the varieties of rice?—*A.* Provided at least one or two students from every sub-division are taken in there. One central farm would not be of benefit to people who live at some distance. If some students are brought in there as apprentices, and know how the soil is being treated, these people would carry the lesson to their villages.

Q. Would it be a good thing to find out what would be the best kind of rice to grow in any particular locality by means of experiments?—*A.* I think so.

Q. Also as regards the method of planting? Some say the method of planting is a wasteful one; in some parts they plant rice singly; in Assam they plant in bunches.—*A.* There are certain varieties of which they say a single plant would do.

Q. Do you think the operations of the Agricultural Department might be extended in that direction?—*A.* Yes.

Q. At present I understand there is no rice farm in the province, except a small farm in Sylhet?—*A.* Yes.

Q. Would it be possible to introduce demonstrations in different *mouzas* of the Assam Valley under select persons?—*A.* It may be made over to the village authorities as it is developed, to educate people in improved methods of agriculture.

Q. With regard to the land policy would you do away with the auction system altogether in connection with the 30 years' lease operations?—*A.* Yes, if it be for the people of Assam only.

Q. You would not do away with it for others?—*A.* Not for companies that are floated in Calcutta and other places.

Q. What is your idea of a Director of Industries; who should he be; what sort of officer should he be; of what qualifications?—*A.* I have said in my note he should be a business man, with some degree of technical knowledge, but his principal qualification should be his capability to mix and converse freely with the actual workers in the different branches of industry. That is my idea of what the Director of Industries should be. To get a highly paid official who is unapproachable by the general public will be no good.

Q. Would it be necessary for him to know the vernacular of the country?—*A.* Of course. He should be such an officer as would be able to speak freely with the people when he goes out on tour.

Q. Is it a fact that in some districts of the Assam Valley silkworm weavers do not allow anybody but an Assamese to enter their houses to see the silkworms?—*A.* I don't know of any case. I have read of that.

Q. I think Rai Bahadur Basu in his report says so?—*A.* Yes.

Q. You are in favour of creating commercial emporia to exhibit and sell goods?—*A.* Yes.

Q. Where would you place them?—*A.* It must be at a place where the finished articles can have a ready market.

Q. Do you know anything about the Commercial Museum at Calcutta?—*A.* No, I have not seen that as yet.

Q. Do you think that is any good as regards Asam; does it benefit us in any way?—*A.* I could not tell.

Q. Do you think it leads to the purchase of our goods: for instance, our silk? We have some silk in the Commercial Museum in Calcutta, and the exhibits are labelled with the names of the shops and the prices. Have you heard of any sale being actuated by such exhibits?—*A.* No, I have not heard. What I say is that these articles should be placed in such a way that it would create a demand.

Q. Where would you place it; would you have an emporium at Gauhati?—*A.* I don't think a commercial museum at Gauhati would be of much benefit because the outside world would not know of it. It must be somewhere where it would create a demand.

Mr. C. E. Low.—Have you heard of the Bengal Indigenous Industries Committee for the sale of indigenous products in Calcutta?—*A.* Yes.

Q. What about trade agents in other parts of India, or other parts of the world. Have you said anything about that?—*A.* No.

Q. Do you think it would be a good thing to get into communication with trade agents?—*A.* Yes. I want Assam products advertised to the outside world so that they would create a demand.

Q. You would advertise?—*A.* Yes.

Q. Do you think sending samples to trade agents would be a good thing: to other countries I mean?—*A.* Yes, I think so.

Q. On the last page of your evidence you talk about the prohibitive rate of freight for motor transport between Gauhati and Shillong. Is that on all articles? I thought it was Re. 1-8 a maund?—*A.* During the potato season they charge Rs. 3 a maund as potatoes cannot keep long.

Q. It seems to be very high for 63½ miles?—*A.* Yes, that is what I object to. Potatoes are one of the principal articles of trade from the Khasi hills and should not be taxed so high. Government could fix the rate.

Q. Under what authority: under what law or Act?—*A.* There are Government directors in the company. It is a Government subsidised company, and Government could do it executively.

Q. Of course, the remedy for that is competition?—There is very little competition, and there should be more competition.

Witness No. 404.

Babu Jogendra Chandra Chaudhri, *Inspector of Co-operative Societies, Surma Valley and Hill Districts, Sylhet.*

Written Evidence.

Government aid to Industries.

Co-operative societies.

Hand-loom weaving industry has been developed by the formation of weavers' Co-operative Societies. From the Central Co-operative Banks capital is supplied to this class of Societies with which the weavers purchase improved looms and other accessories and work under the guidance of the weaving master employed by Government. Under the existing industrial condition of the country no one can neglect the claims of the hand-loom industry. Hand-looms are specially suited for the production of durable coarse cloth for which there is a very large demand in this country.

The result has been that there is an increase in the demand for the products of the industry.

I may note here that the yarn sold by the Indian Mills has been found, in many cases, not to be so good as yarn used by them for their own manufacture, and it would be an advantage if some co-operative spinning mills could be started to feed hand-looms only.

Co-operative Societies should be encouraged for weaving, spinning, bamboo-mat manufacturing and carpentry. The bamboo-mat manufacturers are not in direct touch with the actual consumers. This industry is almost entirely in the hands of the *mahajans* who supply the workers with raw materials and take back the finished article from them after paying them wages at a fixed rate. In every case the profits of the industry go very largely into the pocket of the *mahajans*. The result is that on an average the worker does not earn more than Rs. 3 to Rs. 4 a month and he is always in debt to his *mahajan*.

It is clear from the above that the most important help which the industry can receive will be in the direction of the readjustment of the relations of capital and labour. If the industry is to flourish we must try and improve the financial position of the people and free them from the clutches of the *mahajans*. The establishment of Co-operative Societies among this class of people would, therefore, appear to be the first want of the industry.

Oral Evidence, 7th January 1918.

Mr. C. E. Low.—*Q.* How do your Co-operative Societies among weavers work?—*A.* The weavers are given loans from the Co-operative Societies.

Q. To the individual weavers?—*A.* Yes.

Q. You don't have any system of joint purchase of a comparatively large quantity of yarn on behalf of these societies?—*A.* We have not adopted it yet.

Q. Have you considered the idea of purchasing several bales of yarn in a fairly wholesale way, and then letting the weavers share that, putting in a joint indent every month?—*A.* We are trying to do that.

Q. What difficulty do you find about it?—*A.* The difficulty is that we want certain concessions from the mills, and the mills will not allow us the concessions.

Q. You asked the mills to let you have it at better than the ordinary trade terms?—*A.* Yes.

Q. What mills are your dealing with?—*A.* The Bombay Mills and the Bowreah Mills at Calcutta.

Q. Who are their agents, and are they local or Calcutta?—*A.* Local agent, a Marwari,

Q. Won't he give you the same terms as he gives another Marwari?—No, he does not.

Q. You say, "the yarn sold by the Indian Mills has been found in many cases to be not so good as yarn used by them for their own manufacture." Have you purchased yarn from anywhere else except Calcutta?—*A.* No.

Q. Because our experience of mills in the west of India was that they not only gave as good yarn as anybody else, but they had it specially done up in a way to be suitable for hand-loom weavers. You will find mills in the west of India, a large proportion of whose business is with hand-loom weavers. What is the matter with this yarn; is it knotted or what?—*A.* The yarn is not properly sized and it is made from inferior cotton, and is not given a proper twist for warp.

Q. Do you want the mills to size it for you before you purchase? Don't your own people size it? Do you want to buy warps or yarn?—*A.* Yarn.

Q. Have you any Co-operative Societies at present for other industries, such as bamboo mat-making, carpentry, etc.?—*A.* They have not started any Co-operative Societies among bamboo mat manufacturers.

Q. Have you examined them at all from an economic point of view; do you know how many bamboos the individual members buy at a time?—*A.* They don't buy bamboos; the merchants supply them with the bamboos.

Q. Are suitable bamboos for mat-making very expensive?—*A.* Not very expensive.

Q. Yet they are too poor to buy their own bamboos?—*A.* Yes.

Q. Or perhaps the members are in debt?—*A.* They are very much in debt to the *mahajans*.

Q. There is no great difficulty experienced in starting Co-operative Societies among bamboo workers in other parts of India. Have you much difficulty in getting capital for financing these industrial societies?—*A.* We find considerable difficulty.

Q. What is your turnover for the whole province in the year?—*A.* I don't understand you.

Q. How much money is lent out every year in Assam?—*A.* About 1½ lakhs.

Q. For the whole of Assam?—*A.* Yes.

Q. Where is this capital mostly provided from?—*A.* The capital comes from the local people.

Q. From the deposits of members or from loans from outsiders?—*A.* From the deposits of members.

Q. You have not had much in the way of loans from outsiders?—*A.* Not very much.

Q. Have you obtained loans from central banks of other provinces?—*A.* No.

Q. Have you ever tried for it?—*A.* No.

Q. You have not asked Madras, the Central Provinces or Bengal?—*A.* No.

Mr. A. Chatterton.—*Q.* How many Co-operative Societies are there in Assam?—*A.* Nearly 400.

Q. How many of these are devoted to weaving?—*A.* I cannot say.

Q. In the Surma Valley how many are devoted to weaving?—*A.* Six.

Q. How many members have they got?—*A.* About 150.

Q. Are there central banks for the financing of these co-operative societies?—*A.* No.

Q. With regard to your remarks about bamboo mat-makers, you say, "this industry is almost entirely in the hands of the *mahajans*." Aren't these the men who really carry on the industry, employing the other people as workmen. If you take the business out of their hands, will it not collapse altogether?—*A.* It won't collapse.

Q. Do not these *mahajans* occupy the position of masters who employ a certain number of men and supply the material and give out orders?—*A.* They pay wages at very small rate; that is the difficulty. That is a great hardship to the people.

Q. Are the wages paid less than that for ordinary coolies?—*A.* Yes, less than the rate for ordinary coolies.

Q. Then why don't the men go and work as coolies?—*A.* Because they are always in debt to the *mahajan*.

Q. Do they rely on mat-making as a subsidiary industry?—*A.* Yes.

Hon'ble Lt.-Col. P. R. T. Gurdon.—*Q.* You speak about the bamboo mat manufacture, are there any other kinds of mat business than that made out of bamboos?—*A.* There are.

Q. Will you kindly enumerate them?—*A.* Sitalpati, nal reeds. These are the two kinds.

Q. Is there a good market for sitalpati?—*A.* Yes.

Q. Where?—*A.* In Calcutta.

Q. Do you find any difficulty in getting the patidoi from which the sitalpati is made?—*A.* No, we have not found any difficulty.

Q. Where do you get it from?—*A.* From the locality; from villagers in Sylhet.

Q. Do the mat workers import any from the Assam Valley District?—*A.* I don't know.

Q. Do you think the industry could be extended, the sitalpati industry, by obtaining more capital?—*A.* Sitalpati traders are generally rich people and don't require any more capital.

Q. Only the bamboo manufacturers are poor?—*A.* Yes.

Q. These *mahajans* that you speak of, who are they? Are they, Marwaris or local Shylocks?—*A.* Local people.

Q. Do you think you could work without them?—*A.* Yes.

Q. How? The Co-operative Credit Societies would advance the money to the workers and make all the arrangements for the sale of their mats, etc?—*A.* Yes.

Q. Are you quite certain that the figures that you gave Mr. Low just now, 1½ lakhs of rupees, as the total amount lent out for the whole province, is correct.?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee—What is the total capital?—*A.* 10 lakhs. They lent 1½ lakhs to co-operative societies and the rest of the amount goes to individual members.

Hon'ble Lt.-Col. P. R. T. Gurdon.—Q. How many societies have you got in the Surma Valley?—*A.* 170 or thereabouts.

Q. Are any of those industrial co-operative societies?—*A.* Yes, we tried one industrial society and failed.

Q. None of those are industrial then?—*A.* Only the 6 weavers' societies we have.

Q. Where are they?—*A.* In Karimgunge sub-division.

Q. What do they weave; they don't weave silk; do they weave cotton?—*A.* Yes.

Q. Are they doing well?—*A.* Yes, they are doing well.

Q. Could you form others?—*A.* Yes, there is very great demand for such societies all over the district. I want to say something which I missed in my note on trade, about the co-operative dairy in Sylhet. It failed because I could not attract much capital. There was something in connection with it, about the land policy of Government. It was a piece of alluvial land which this society tried to get settlement of from Government for grazing purposes, but they could not have the lease of this land, because as the law now stands, the land should be settled with the neighbouring landholder; so the society was not given the lease for it; so for want of grazing grounds and want of capital the society failed. Of course if they could help us with grazing grounds we could have managed. There was some correspondence with Government and Government declined to let us have the land.

Hon'ble Lt.-Col. P. R. T. Gurdon.—Was it Government khas land?—*A.* Yes.

Q. Most of the land there is permanently settled?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—If you had the land you could have started it?—*A.* Yes, I think the society would not have failed.

Babu S. K. Dass.

Witness No. 405.

Babu Surendra Kumar Dass, *Zemindar, Akhalia.*

Written evidence.

Capital. I have had very little or no experience of raising capital for industrial enterprise. I was Director of the Karimgunj Commercial and Agricultural Society, Ltd., for a very short time only. It collapsed partly owing to some misunderstanding among its promoters and partly owing to the outbreak of the great war now going on which made the people somewhat shy of parting with their hoarded money. I believe, however, that for a good and honest worker, or for any reliable company there will be little or no difficulty in raising the necessary funds from our rich and educated persons who are according to the spirit of the age, more eager than before, to help local industries. I may mention, as an instance, that several gentlemen will very gladly join with me and advance money if I admit them as partners, but I prefer to carry on the business alone with the help of Government for which I have already submitted an application to the Secretary, Provincial Industrial Committee. The little hesitation which some people now feel in laying out money in new enterprises in consequence, of the failure or mismanagement of some, may be removed if the management is placed under some sort of Government control.

Government aid. What that control should be would depend on the nature of the assistance given. Government may help the existing or new industries in any of the methods mentioned under question 5 of your letter according to the local or special needs of the industry concerned. It will be difficult to suggest an uniform method nor will it be desirable to tie the hands of

Government in any particular way. So far as cabinet-making industry is concerned, Government may, I think, give loans with or without interest on approved security or supply machinery or plant on the hire purchase system. I would myself prefer the latter. In both cases some assurance should be given that Government should according to its needs, purchase all approved articles from local factories instead of indenting for those from distant places.

Where Government assistance is given in any shape, an officer, preferably an expert, should be appointed to audit the accounts and to see that the business is conducted on economical lines and when necessary give instructions for better working of the industry. In my humble opinion, Government should pioneer such industries as are most promising and require large outlay and expert advisers or engineers for their management. For instance, there are ample raw materials in this province for the manufacture of sugar, silk, tobacco, matches, paper, cotton, leather goods, etc., and I think Government may start factories for some of these industries as well as for iron and steel work. Of course such factories should be handed over to private capitalists as soon as they reach a profitable stage. At present (even) European capitalists are not forthcoming to take up any of these industries for lack of knowledge and experience. Tea offers them a very lucrative industry in this province and Indians are also following in their foot-steps.

Financing industries.

There is no bank in this province and the time has not perhaps yet come when an Industrial Bank with branches in all important districts can be started with any degree of success. Local money-lenders charge heavy interest and the rates of interest charged even by Co-operative Societies from ten annas to one rupee per cent. per month are high enough for new enterprises. In this matter of pecuniary assistance we must for sometime come to look to Government alone. It may give loans with or without interest to members of any company or to any individual, somewhat like agricultural loans, provided that the rate of interest where charged should not be more than four per cent. and that the time of repayment should be extended from five to ten years according to the nature of the industry. At headquarters of districts and sub-divisions, such loans may be given through Municipalities or through Co-operative Societies so that constant supervision may be exercised over the manner in which the money is spent, without unduly interfering with the internal management which should be left to the promoters of the industry. I may note here also that Co-operative Societies are on the whole working well in the towns but not so well in the muffasil and I would not advocates their extension to outlying places until people are better educated in the principles of co-operation and adequate provision has been made for their efficient supervision and guidance. As there will be very few cases of loans of this kind, I think they may be given direct by Government on the report of the Chairman of Local-boards or Municipalities.

Industrial schools

What is most needed in this province is the education of the people in the use and manufacture of various kinds of raw materials which are easily available locally. Without attempting to do anything on a big scale at present Government may start industrial schools where there is a demand for them, with qualified teachers to impart both theoretical and practical instruction to the boys in such useful industries as the Government may think most suitable in the interests of the country. I think at the commencement instructions may be imparted in carpentry, smithy, weaving and tanning of hides. Hand-loom weaving has a great future and the employment of teachers will be very much appreciated. People may also be admitted in the Government or private factories for practical training on condition of serving in the factories for a certain number of years on stipulated salaries. The railway workshops at Jorhat, Dibrugarh and Badarpore may profitably be utilised in the training of pupils.

As regards the industry in which I am engaged, the want of skilled labour is much felt and the opening of carpentry and smithy classes either in connection with my workshop or any other which may be started hereafter would perhaps supply a great want at a comparatively small cost to Government.

Forest Department.

I have no particular complaints to make against the forest department but I would urge that the royalty on timber required for cabinet-making may be exempted altogether or reduced to a mere nominal rate as timber in Government forests in Cachar and Sylhet is becoming scarce and we have to pay very high price for their freight from the Lushai country and Hill Tipperah.

Cabinet-making.

There are two saw mills at Bhanga and Lakshipur and it is doubtful if another on a big scale will be successful in this valley. For cabinet-making industry one bend saw and a turning lathe with an oil-engine will be very useful. There are some kinds of local wood which if well seasoned may be used for high class furnitures at a much smaller cost but the freight of spirit which is much used in polish is exorbitant and I would urge its reduction.

I would submit that the benefits of Co-operative Societies in the matter of court fees and income tax be extended to all small industries.

Land policy.

The law regarding the acquisition of land may be so amended as to enable Government to acquire suitable sites of land required for industrial schools and work-shops, as experience has shown that it is difficult to secure good sites even at a heavy cost by private arrangement.

I think there should be a separate officer preferably an expert to inspect and supervise industrial schools and workshops and generally to direct and advance new industries.

ORAL EVIDENCE, 7TH JANUARY 1918.

Mr. A. Chatterton.—*Q.* In the first paragraph of your note you say that you have an industrial concern going on and that several gentlemen will be very glad to join you and

advance money if you admit them as partners, but you would prefer to carry on business with the help of Government: that is to say, you hope to get money out of Government on better terms than from your partners. Is that what you mean?—*A.* Yes, I think so.

Q. Can you give some particulars as to what is the business which you are carrying on?—*A.* Cabinet-making and smith's work.

Q. Where is your factory?—*A.* At Akhalia, near Sylhet.

Q. Are you running this yourself?—*A.* Yes.

Q. What help do you get from Government?—*A.* At present I do not get any help from the Government.

Q. But you would prefer to get help from Government?—*A.* I would like to get.

Q. What form of help do you expect from Government?—*A.* I want machinery on the hire-purchase system and acquisition of land.

Q. You would like to get machinery on the hire-purchase system from Government in preference to increasing your capital by taking in fresh partners?—*A.* Yes.

Q. Is there any system in Assam by which you can obtain such assistance from Government?—*A.* None.

Q. For what reason do you desire that the royalty on timber for cabinet-making should be abolished?—*A.* In the case of an infant industry like cabinet-making in Sylhet the royalty may be diminished or altogether abolished, because we require our men to learn cabinet-making, etc.

Q On the ground that the men should learn cabinet-making you wish to have the royalty abolished altogether?—*A.* Yes. Wastage is exorbitant in the hands of apprentices.

Q. What royalty do you pay?—*A.* Generally 3 to 4 annas per cubit foot.

Q. Do you get all your timber at that rate?—*A.* Not all. For cabinet-making we require first class timber and the royalty on this is 3 or 4 annas.

Q. How do you get your timber? Do you have it cut in the forests?—*A.* We buy from other dealers.

Q. At what rate are you now buying per cubic foot of first class timber?—*A.* We generally pay a rupee or 14 annas per c. ft. of round log.

Q. How many men do you employ?—*A.* In my carpentry works there are some sixteen mistris, and in the polishing department there are six mistris.

Q. Are they making household furniture?—*A.* Yes.

Q. Is that entirely for local use or do you send it away?—*A.* For local use.

Q. Are the carpenters you employ Assamese or are they imported men?—*A.* They are Punjabis, and there are some Calcutta men also.

Q. What led you to take up carpentry?—*A.* I learnt mechanical engineering in Calcutta at the Bengal Technical Institute.

Q. How long were you there?—*A.* Four years.

Q. Have you got any machinery?—*A.* At present I have got one machine for drilling and a small lathe.

Q. Besides carpentry, you do smith's work also?—*A.* Yes.

Q. What sort of work are you doing in that line?—*A.* I started making pruning knives, but the price of steel is much higher now, and therefore I have stopped that part of the business as present.

Q. Where did you get your steel from?—*A.* From Calcutta.

Q. What class of steel?—*A.* We bought old files.

Q. Is this smith's work going on in any other form now or have you given it up altogether?—*A.* I got some order from a College for laboratory apparatus, and that we are preparing now.

Q. Do you make any agricultural tools for the people of the country or for planters besides?—*A.* No. They generally use rough tools, and we cannot handle these things.

Q. You don't make any planters' tools?—*A.* No.

Q. When you were able to get steel—old files—in the Calcutta market, were you able to compete against imported pruning knives?—*A.* Yes, I think I shall be able if some sort of help is given by Government.

Q. Before the price of steel became high, how many pruning knives were you making?—*A.* I only began that work lately. I made about a thousand.

Q. To whom did you sell them?—*A.* To tea gardens.

Q. To Indian tea gardens?—*A.* Yes.

Mr. C. E. Low.—*Q.* What business did this Karimganj Commercial and Agricultural Society propose to do?—*A.* Tea business.

Q. Was it to be the business of growing tea?—*A.* Yes.

Q. Was it a tea garden?—*A.* They proposed a company for growing tea. They have not yet started it.

Q. How much capital was paid up?—*A.* Only about Rs. 5,000.

Q. You say there is no bank in this province. Is there no branch of a bank anywhere?—*A.* At present there is no branch anywhere.

Q. There are, I presume, some Indian bankers, Marwaris and so on?—*A.* There are bankers, but they charge high rates.

Q. Are there any loan societies, branches of any Bengal loan societies?—*A.* I do not know.

Q. You say under the head "Industrial schools" "I think at the commencement instructions may be imparted in carpentry, smithy, weaving and tanning of hides." Do you think that tanning of hides is suitable as a small scale cottage industry?—A. I think chrome tanning may be done on a small scale.

Q. There is a good deal of small scale tanning done in India: is it not the fact that small tanneries of that sort make exceedingly bad leather? Do you think that they can compete with large tanneries such as are springing up in many parts of India?—*A.* I have no clear idea but I have got friends of mine who have learnt chrome tanning in Madras and who have started small tanneries.

Q. You don't mean the kind of village tannery where the man works with his family?—*A.* No.

Q. You say "the railway workshops at Jorhat, Dibrugarh and Badarpore may profitably be utilised in the training of pupils." Don't they train any apprentices at present?—*A.* They train, but they don't give theoretical knowledge.

Q. Hava they no teaching classes attached to their workshops?—*A.* None at all.

Q. Do you know whether they pay any particular attention to their apprentices? Have they any special officer to look after them or do they simply learn what they can in the shops?—*A.* Yes, if the man is intelligent he will understand something by seeing and can pick up some knowledge.

Q. Is there no systematised way of dealing with them?—*A.* I do not think there is any.

Q. On what is your knowledge of this question based about apprentices in the railway workshops? Have you been to the railway workshops or have you known of any boys who went there as apprentices?—*A.* I have occasionally visited shops at Badarpore.

Hon'ble Sir R. N. Mookerjee.—*Q.* If you have no objection, can you tell us what is the capital of your own concern?—*A.* In my concern the capital is about Rs. 15,000.

Q. What do you earn in a month?—*A.* Nearly Rs. 100 a month.

Q. Is that excluding your own pay?—*A.* Yes.

Q. Have you any idea of extending your business?—*A.* Yes.

Q. After the war?—*A.* Yes, after the war. At present machinery is not available.

Q. If you get machinery, you will extend your business?—*A.* Yes, that is the difficulty.

Q. Why then don't you want partners?—*A.* I don't want partners because I think there will be difficulty about management.

Q. You mean there will be friction?—*A.* Yes

Q. I take it you are a native of Assam?—*A.* I belong to Sylhet.

WITNESS No. 406. *Babu K. N. Bardalaya.*

BABU KESHAB NATH BARDALAYA, *Merchant and Planter, Dum Duma.*

WRITTEN EVIDENCE.

Assistance in Marketing Products.

Commercial museums.

If by commercial museum it is meant that it is a museum where articles of exports and imports would be kept as exhibits for the information and knowledge of buyers, sellers and likely manufacturers then I am of opinion that there should be one at Gauhati—(Gauhati being the central place) where Assam indigenous products such as eri, muga, lac, ivory, deer-horns, buffalo-horns, jute, other fibres like rhel, dye stuffs, bell-metal, utensils and brass utensils, Assamese jewelleries, cloths, rubber, cocoons of eri and muga, Assamese looms and spinning machineries, articles made of ivory, etc., may be kept with list of prices. In this museum samples of articles imported by Government also may be kept with a list of prices and the places from where bought, so that intending manufacturers may readily see and derive knowledge and other useful informations for his purpose. It would also be a great and desirable thing if some of the articles made from our raw materials in foreign countries be placed in the museum.

Sales agencies.

At present in the poor Assamese ryots' cottage industries the producers get very little for their labour and time. It is the middlemen who make the most profit and hence it would be a great help and blessing if these Assam indigenous cottage products be sold by sales agencies at Gauhati and other central places just as tea is sold in Calcutta. The villagers of Assam may safely place their cottage products in the hands of respectable headmen of their villages who may pack and send the articles by train to Gauhati and other central places, the Railway giving special conncession rates for freight and the articles being sold from the commercial museums. The headmen and the commercial emporia agents will levy a reasonable amount of commissions for their labour. This I hope will save the Assam ryots. The commercial museums might just be started by Government with the building of the house, appointment of men and officers for a couple of years and then handed over to private but respectable companies taking the capital and an interest at 4½ per cent. per annum.

Industrial exhibitions.

Industrial exhibitions cost a good deal of money which is almost a waste. They only bring people together socially : the furtherance of commerce is not attained. People gather and see the *tamashas,* purchase something and then disperse and clean forget the affair soon. So I am against these exhibitions. In my opinion the fairs and marts held in Kamrup on occasions of *sabhas* like the *Kohora sabha,* etc., give greater facilities to poor sellers and buyers to sell and purchase. These *sabhas* cost nothing and should be encouraged by private people everywhere in the province. I don't think there is any need for Government to establish such exhibitions at all.

Trade representatives.

Not to speak of Assam, India is not yet fit to send trade representatives to foreign countries.

I am against temporary commissions for special enquiries. Commissions are costly affairs for the Indian people. I do not recommend trade representatives in other provinces of India. Assam has very little big trade. No doubt there is coal and petroleum and tea but all these are in the hands of European companies and they know best if they should send representatives to foreign countries or other provinces.

Purchase of stores.

I don't know the rules for the purchase of Government stores nor have I criticisms to offer. All that I may humbly suggest is that when available our paternal Government would purchase Indian stores, *i.e.,* articles made by Indians as much as possible provided these articles be of the required standards. Facilities should be given thus to Indian manufactures.

Banking facilities.

A well organised system of banking is necessary. The banks should receive support from Government, otherwise banks would not succeed. These banks may give loans to support cottage industries at nominal rates of interest say 4½ per cent. per annum on good securities. Cheap and new machineries that may make gains of cotton, eri and silk may be supplied to village people on hire or hire-purchase system just like what prevails regarding sugarcane pressing and selling of Singer's sewing machines by the Singer Co.

General.

I am a merchant dealing in miscellaneous stores and a tea planter. I have nothing to suggest on these matters.

Suggested industries.

My experience suggests that Assam is suited for a number of new industries such as (1) manufactures of sugar, (2) making paper pulp, (3) manufacture of cement, (4) making agors, (5) dye stuffs.

For sugarcane cultivation there is enough of land in the province. But several factors have been retarding this important industry. In the first place lands in Upper Assam from Nowgong and Darrang upwards are not given either under fee simple or waste land grants. There are no banks from which the enterprisers can get money help. People are loth to subscribe unless and until they see that the industry is favoured by Government. I know two instances. Many years ago one Srijut Debeshar Gosain of Golaghat began on a small scale the cultivation of sugarcane in the Golaghat sub-division. He got a few acres of lands on favourable terms like waste land grants. He did not take any sharers or partners. With his own money he started the industry and by now he has been doing good business in molasses. He has succeeded so far as the concern is entirely his own. The Nepalese do sugarcane cultivation all over the province. They receive finance from the mahajans at exorbitant rates of interest and the result is that these Nepalese though they do a good business and labour hard live only from hand to mouth, all their surplus profits being absorbed by the mahajans in the shape of usurious rates of interest and compound interest. Only some six years ago another Assamese young gentleman who had training in such business in Japan made a proposal of starting sugarcane cultivation and manufacture of sugar on a large scale. He travelled from district to district asking people to subscribe, and the people put down decent sums in the subscription list. The gentleman collected a few hundreds and started sugarcane cultivation in Dibrugarh near Tinsukia. He applied to Government for land on easy terms. But the Government wanted him to subscribe to some conditions perhaps in the interest of the tea industry. To these conditions he did not agree and the subscribers then began to show unwillingness to pay up more money as the concern was not made into a joint stock company business and the subscribers found that Government was not willing to give land in Dibrugarh on favourable terms. With the few hundreds he collected he planted some canes taking lands on decennial leases. He manufactured some *gur* but when he put

the *gur* into the market for sale the mahajans nonplussed him by offering him prices which would not cover even the cost of his cultivations, and thus he had almost to give up the industry and I have been one of the losers by few hundreds of rupees. Had the gentleman got land on easy and favourable terms people would have paid up their promised amounts and the concern would have been a success and most profitable considering the rise in the price of sugar by leaps and bounds ever since the war.

In my humble opinion the forests of Assam contain enough of materials, *e.g.*, bamboos and grasses of different kinds from which paper pulp may be made and papers manufactured. Research and expert advice is necessary before such an industry is started. Paper pulp.

I think in Assam there are materials from which cements may be made. Cement.

This industry is being done by a few traders in the Nambor forests and in the Mikir Hills. The Mikirs and other hill tribes collect these and sell to traders. Agors.

There were Assamese indigenous dyes in former times. These have died out but a revival may be attempted. Dyes.

(*Witness did not give oral evi dence.*

WITNESS No. 407. *Babu Pavitranath Das.*

BABU PAVITRANATH DAS, *Karimganj.*

WRITTEN EVIDENCE.

I have some experience in raising capital for industrial enterprises as I was Director of the Industrial Development Company (District Sylhet) for a short time. The Indian capital, it has been often said, is shy. There is always some difficulty in raising capital for enterprises the condition and prospect of which are not known to the people. Illiteracy and lack of information are mainly responsible for what has been called the shyness of Indian capital, and to add to this, there is reckless business enterprise of people more or less unfit for the task they take upon themselves. The difficulty in raising capital peculiar to Assam is, that education and information are lacking among the moneyed classes. Those who know that a particular line of investment will pay, are generally without money to invest. This is why we have to resort to canvassing for such profitable enterprises as tea. Owing to a big jobbery and misappropriation recently revealed in the Cachar Native Joint Stock Company (an old tea company of the Surma Valley) some people will hesitate to invest money in new enterprises. To remove this sense of mistrust from the people's mind and to ensure the safety of their investments I should like to suggest that the Director of Industries should be given power to investigate the affairs of any company and to report to the Government about the mismanagement of the company, and Section 138 of the Indian Companies Act may, if necessary, be amended. Capital.

The Secretary of State has sanctioned a Director of Industries for the province of Assam. With a view to develop the cottage weaving industry in this province it is essential that the Director should be an expert weaver with knowledge of dyeing and mechanical engineering. He should also have experience in developing cottage industries of foreign countries. He must be a very practical man and intimately acquainted with the condition of industry in this province.

The weaving industry in Assam is at present greatly hampered for want of good yarn. Nowadays only the rejected yarn is placed in the market by the cotton mills; so, the finish of hand-loom made cloths are not good. To remedy this defect hand-power improved machinery should be introduced and the "old charka" system should be revived. These spinning machineries should be supplied to the weavers on the hire purchase system, or, loans should be given out for the purchase of the same. In my opinion, giving loans will be the best method of aiding industrial enterprises as the above. But no interest on such loans should be charged in any case, till the concern or industry is in a position to pay it (say, for a period of five to seven years during which the industry may be expected to be in a position to pay the interest). Loans without interest will do much to revive the decaying cottage industries. Government assistance.

In this province there being no cotton mills, the yarn is imported from Calcutta; and as the freight charge is very high, the cost of the products of this province becomes higher than that of the products of other countries, and this renders competition with the sister provinces very difficult. I am, therefore, inclined to think that Government aid in reducing freights will facilitate the improvement of the industry. Government may for some years to come subsidise freights on the yarn brought from Calcutta, with a view to bring the cost of the Assam weavers' productions at par with that of the weavers of Calcutta, Dacca and other districts. Railway freight.

In order to develop the industry there should be held annually, weaving competitions with large prizes, such as may be utilised by the weavers as their capital. Improved handlooms, warping machines and drums may be awarded as prizes.

The rearing of the *endi* silk on improved European method should be introduced in the Brahmaputra Valley and the spinning of the *endi* silk by improved machinery should also be tried.

Commercial Museum.

I think one commercial museum at least to be necessary for every province. But in a commercial museum in Assam, only such products should be kept as actually are manufactured or possess the necessary condition of production in the province.

Weavers willing to visit the Calcutta Commercial Museum or the weaving centres of other places such as Benares, Madura, Bangalore, etc., should be allowed free passage. The railway fares should be borne by the Government as is done in the case of patients going to the Pasteur Institute.

Exhibitions.

Industrial Exhibitions should be held both in the Brahmaputra and the Surma Valleys. The aim of such exhibitions should be to bring buyers and sellers into close contact with one another. A fair should also be held along with the exhibitions.

Industrial Banks.

It is notorious that there is no Industrial Bank in the country. The fact is there is stringency in the Indian money market as the high rates of interest in different places would show. The remedy seems to be in establishing Industrial State Banks in every province and bringing them in line with the needs of the country, generally to encourage the existing banks to render adequate assistance to industrial concerns. The Government may grant certain concessions to banks or even allow them a small dividend on the total amount lent out by them, to promote industrial enterprises.

Co-operative Societies.

In Assam Co-operative Societies are few, and I think there is no reason why Co-operative Societies should not stimulate those cottage industries (*e.g.*, handloom weaving, etc.) which require some outlay, and which it is not possible for the poor householders to start at the very first stage. Co-operative Societies may be started with the aid of the Government to buy improved handlooms, machines for making socks, etc.

Co-operative Societies should give encouragement to those industries of which the machinery, etc., are too costly for the individuals to buy, but nevertheless are essential to efficient production.

At present the system of supplying capital to the Co-operative Weaving Societies from the town banks is not at all satisfactory. The town banks are not always ready to grant loans to Weaving Societies owing to the paucity of capital. The Government should supply Co-operative Weaving Societies money at the rate of 4 per cent. per annum, when recommended by the Director of Industries.

Before the year 1908, there was no fly-shuttle handloom in the Karimganj Subdivision (District Sylhet). But in that year a young man of the Bhadralog class started a weaving factory at Sylhet, and employed some boys of the weaver class for doing the work of sizing, warping, etc. Although the weaving factory collapsed in a few months, the boys learnt enough of weaving in fly-shuttle looms and started fly-shuttle looms in their own villages.

There are at present more than 1,000 fly-shuttle looms working in the district. In my opinion a travelling demonstration of weaving and dyeing factory would be very useful for the development of the cottage weaving industry.

(*Witness did not give oral evidence.*)

Mr. A. B. Hawkins.

Witness No. 408.

Mr. A. B. Hawkins, *General Manager, The Assam Oil Company, Limited.*

Written Evidence.

Official organisation.

It has always appeared to me that, whatever might have been at the back of Lord Curzon's mind when he created the portfolio of Commerce and Industry, it has in practice been of little assistance to the interest it was supposed to represent.

To my mind the Member should be a medium between Government with their Departmental red tape and commercial interests and that such medium should have strong sympathies leaning towards commerce. Should any point be raised by Government deterrent to such interest it should be his endeavour to remove the objections. He should in short be a strong sympathiser with the point of view of the non-official, readily accessible to the commercial and industrial communities and ready to represent their interest in the innermost privacy of the bureaucratic fastnesses.

It appears to me that the Member for Commerce and Industry, surrounded as he is, by his permanent Government staff at once becomes absorbed in the bureaucracy.

It may well be that this criticism goes beyond the scope of your enquiries and be inadmissible but a good deal in my opinion hangs upon this.

At the Dacca Industrial Conference held in 1909 I supported the resolution urging the appointment of a provincial Director of Industries. Partly in view of the expression of opinion regarding the Member for Commerce and Industry I am inclined to revise that opinion and would prefer to see set up an advisory board something similar to our existing advisory railway and river connection board. **Advisory Board necessary.**

The membership of such should be by selection and nomination by the head of the Provincial Executive and their function should be purely advisory without executive powers. It should be prepared to take up the cudgels in favour of any existing or proposed industry that was in difficulties or troubles of any sort.

The questions at issue should be carefully sifted and the final conclusion arrived at should be given adequate weight by the final arbiter, be such the Provincial or Imperial Government. It is obvious that such advisory board should include departmental heads.

Many a grievance—let me say with the Forest Department and which is so common in Assam—would either be removed or cease to be a grievance, were the local conditions and arguments exposed to the cold light of discussion instead of being tied up in involved arguments of precedence or irrelevant matter so often to be found in official files.

With regard to the training of Indians to take a more active part in the industrial development of the country I am fully aware that we are treading upon difficult ground involving technical education and all that it means. To go into this discussion would be too lengthy and I will not attempt it except to express the conviction that it will have to be undertaken and it is not impossible. I would however point out cases which have occurred in this province where, to my mind, excellent opportunities presented themselves to the educational authorities for giving technical education of a very useful kind. Some years ago an experimental sugarcane plantation was started in Goalpara, similarly the fruit orchard was started in Shillong and at Jorhat a regular experimental farm was inaugurated. In April 1914 I suggested, at a meeting of the Assam Legislative Council, that advantage should be taken of such departmentally run experiments to train up sons of *Mouzadars* and such like through a system of scholarship. Nothing has been done and all these years of careful scientific study has been thrown away as a practical educative medium. It is quite true that the agricultural department issues periodic reports anent their progress but if this is satisfying to the educational authorities it is in my opinion much on a par with their general unpractical curriculum. **Training of supervisors.**

I have had a good deal of interesting experience in attempts to train up educated Indians to posts of responsibility involving technical work. Both in the drilling of wells and refining of oil I have always had it at the back of my mind that it was only a question of getting hold of the right stamp of man gradually to replace many men whom we have to import from Europe, by intelligent Indians. One only has to have a few years' experience with the class of so-called technical experts to realise how little experience the majority of them have had before leaving Home and even though some men may be somewhat older and have had some experience in Europe the fact of their age is a very big handicap.

These men though intelligent enough at their own particular work have not got the education, training or tradition which are so necessary to a successful career in India where habits and customs are so utterly alien to the one in which they have been brought up and in my experience this is a handicap which they are seldom able entirely to overcome. Against this the educated Indian may have greater difficulty in grasping the technicalities of the work, but in few cases should such technicalities be as difficult to conquer as is the sympathetic understanding of the country and its people.

I do not suppose there is any industrial work being undertaken in Assam which is more full of technicalities than the one I am engaged upon and yet I give it as my deliberate opinion that there is nothing in it which an educated man should not be able to master, provided he be content to start at the bottom and have sufficient patience and grit to work his way up. I must confess to frequent feelings of great disappointment though from some Indians I have had most encouraging results.

We have just inaugurated a regular system under which we offer graduates in either science or art, terms which I hope may be good enough to create a certain amount of competition. As a probationer we are offering Rl00 per month and such probation would, in the ordinary course of things, extend over about 9 to 12 months during which time they would be initiated into the particular technical work they are required for and at the end of such probation those who have shown intelligence are to be taken on our general staff commencing at R150 and rising up to R300 per month by yearly increments of R50.

From my experience of the average Indian he does not enter his business career with sufficient feeling of dependence upon his own exertion for his existence and it seems to me that this absence of self-dependence is due to their semi-religious sentimentality which thrusts an obligation upon them to help relations to an absurd degree. One of the lamentable results of this is the difficulty a youth experiences in accepting the principle of discipline. Also a too large percentage of them are not sufficiently patient to go through the drudgery of mastering their work and they get disheartened because they are not put into positions of trust and authority more quickly.

(*Witness did not give oral evidence.*)

SHILLONG.

WITNESS No. 409.

RAI BAHADUR UPENDRANATH KANJILAL, *Extra Deputy Conservator of Forests (retired).*

WRITTEN EVIDENCE.

I.—Financial aid to Industrial Enterprises.

I have no personal experience in raising capital for industrial purposes. What I write below is based on my knowledge of the country and its people.

I do not think there is much scope for large industries in Assam, especially Assam proper, where the people have a rooted hatred for factory-work. The chief aim therefore in improving industrial conditions in Assam should be to foster cottage industries, or industries of a communal nature. The bulk of the population are agricultural and they are the only source of indigenous labour. These people work for about four months in the year on their fields and have practically nothing to do during the rest of the year. It would be a great boon to the country if they could be shown how they could utilize their spare time in turning out small articles of every day use without losing self-respect by submitting to be called "coolies." There are many villages which are inhabited chiefly by men of a single caste. In such villages an industry congenial to that caste might be introduced where the people could work jointly and share the profits mutually. No large factories will benefit the people of the soil. They will in most cases be initiated by foreigners with foreign capital and will invariably be worked by foreign labour.

For cottage industries pure and simple the only way of giving financial aid will be through co-operative banks. People will in most cases require small loans to buy tools and plant. In some cases these might be supplied to them on the hire-purchase system.

Government assistance.

For communal industries, especially when they are of some magnitude, it may be necessary for Government in some cases to guarantee dividends for a limited period without a stipulation for refund. This will be sufficient to attract the capital that may be required. When Government will give assistance in this shape the business and its books and accounts will be liable to be periodically inspected and examined by such officers as Government will appoint or authorize for the purpose.

In order to cope with the work that will be thrown on them co-operative banks must be multiplied almost indefinitely so that eventually there will be at least one bank in each *mauza*.

Pioneer factories.

When the object is to introduce an industry which must be undertaken on a large scale to be successful, or which is entirely new and foreign to the instincts of the people, the establishment of pioneer industries appears to be the only feasible means. As soon as such industries begin to be productive of above a certain minimum rate of interest on the outlay, they should be offered to capitalists or companies on fair terms. They should in no case be converted into permanent Government enterprises.

Limitations to Government assistance.

Government should not as a rule assist, beyond the extent possible by the agency of co-operative banks, any enterprise which has a successful competitor in the province, for the very object which would justify direct Government aid has already been fulfilled by the existence of such a competitor. But Government would hardly be justified in giving much consideration to external trade, for India receives no consideration from the organisers of such trade which has in many cases proved prejudicial to her interests.

II.—Technical aid to Industries.

Having been connected with the Forest College at Dehra Dun for over 18 years, I have a little experience of technical and scientific education and researches. I believe the turpentine industry of Upper India has received a distinct impetus from the researches carried on at Dehra Dun, and a few other minor industries might also be mentioned.

As factory work is distasteful to the people, I am afraid demonstration factories will not be of much use in Assam. But there should be a technical school at every sub-divisional town, the crafts taught being varied according to the requirements and idiosyncracies of the people among whom each school is situated.

Research institutes.

Assam is not likely to need a Research Institute of its own for a long time to come. It will be sufficient for the present to have one well-equipped all-round good Imperial institute in India to which all technical and research questions will be referred for solution from the various provinces.

A sort of an enquiry was held quite recently as to the available resources of the country. In view of this a further survey does not appear necessary or justifiable.

Consulting engineers.

I do not think it will be necessary to appoint consulting engineers, at any rate in the near future. As I have said under VII, there will be a mechanical engineer in the staff of the Director or Inspector-General who will be able to help industial enterprises by technical advice and to supply plans and estimates when asked to do so. As far as possible all purchases

should be made by the parties requiring machinery and plant under advice, when necessary, of the mechanical engineer. The system of purchase through somebody else has always a bad odour and should be avoided as far as possible.

III.—Assistance in marketing products.

Commercial museums are very useful institutions, and at least one such museum should be established at a central place, say, Gauhati. In this museum samples of the principal raw materials available in the province as well as of all finished articles prepared from them should be collected for exhibition. Industrial exhibitions are expensive undertakings and are more or less ephemeral in effect. A large proportion of visitors to such exhibitions are village folk for whom the chief attractions are the gaieties which are always provided, and as to those few persons who attend really in quest of information, they would much prefer to go and gather it from the much quieter rooms of a well organised museum. Commercial Museums.

I do not think trade representatives in Great Britain or elsewhere will be of much use in the present state of India's trade, nor is this province ready yet to have such representatives in other provinces of India. Trade Representatives.

The present rules which make it obligatory to obtain certain articles through the Secretary of State should be abolished without delay, local authorities being empowered to purchase everything that may be required for a public purpose either locally or in the open market. Officers charged with the purchase of stores should be in close touch with the Directors of Industries of the various provinces, and a room should be set apart in each museum where articles generally required for Government use should be exhibited to enable manufacturers to try to turn out similar articles. Government patronage.

IV.—Other forms of Government aid to Industries.

In the case of raw materials which usually go to waste in vast quantities either through want of knowledge of their use or of enterprise, Government would be justified in supplying them on easy terms to persons or firms who might come forward as pioneers to utilize them for the first time. But as a rule monopolies should not be granted excepting for very short periods.

With the exception of only two districts, Government is the sole proprietor of all lands in Assam. The procedure of land acquisition is therefore much simpler here than in most other provinces. All lands required for *bonâ fide* industrial purposes should be acquired by Government for the organisers at their cost, and the Land Acquisition Act, if necessary, should be so amended as to make this possible.

V.—Training of labour and supervision.

As I have said before under I, large factories do not exist in this province nor are they likely to come into existence in the near future. A large class of labourers therefore is as yet unthinkable. For the training of craftsmen for cottage industries industrial schools will be the best means, and there should therefore be plenty of these, so that the learners may not have to go far for the training they will seek. The apprenticeship system has many good points, but it can only be resorted to where large factories or workshops exist.

Technical schools ought to have nothing to do with the Education Department and should be entirely under the control of the Department of Industries when such a department comes into existence in this province, or under the Deputy Commissioner until it does so.

VI.—General official administration and organisation.

At present there is no organisation in this province for the development of industries. To begin with it will be sufficient to have a Director with one or two Assistants and a number of Inspectors. When industries have sufficiently developed it will be necessary to have a Deputy Director in each of the valleys with an Inspector in each district and a Sub-Inspector in each sub-division. The Director must have executive powers and full control of all funds budgetted for the development of industries with perhaps this exception that the funds that will be required to start co-operative banks should be controlled by the Director of such banks. I do not see the use of an Advisory Board. When an Imperial Department of Industries is formed the chief controlling officer will probably be called the Director or Inspector-General of Industries, and his functions should be of an executive nature in regard to his staff of experts and their offices, but only of an advisory nature in his relations with the provincial Directors of Industries. The Director of Industries of a province should be a business man with sufficient education and ample local knowledge. In course of time the best men would be promoted Deputy Directors, who in their turn have worked for some years as Inspectors. Graduates of Commerce would probably be the best recruits for Inspectorship. The ideas of experts are liable to be one-sided inclining towards their own hobbies, and non-expert officials are often given to theories and platitudes.

The relations between the Director of Industries and the Provincial Government should be very much the same as in the case of the Director of Public Instruction. The technical schools will be entirely under the Director of Industries and his staff. Correlation of work of provincial departments.

The correlation of the industrial activities of the various provinces will obviously be one of the chief functions of the Imperial Inspector (or Director) General of Industries. When industries are fully developed in all the provinces, it should be exceptional for raw materials of one province being exported to another.

VII.—Organisation of Technical and Scientific Departments of Government.

The only two departments in this province that can directly assist industries are Forest and Agriculture including Veterinary. But as hitherto it has not been any body's business in particular to trouble about the development of industries, there is practically no organisation for the purpose. The Agriculture Department has, I believe, done something towards the introduction and improvement of sugarcane cultivation and also of sericulture and weaving; and following the example of the Forest Department some landholders of Goalpara have placed their forest estates under more or less effective conservancy. It has besides been supplying raw materials of various kinds which give employment to large numbers of men both within and outside the limits of the province. The potentialities of the Forest Department are however immense which are only waiting to come into play gradually as industries spring up and flourish.

Imperial Department of Industries.

An Imperial Department of Industries will become inevitable, with the Inspector or Director-General at its head. But it does not follow that an Imperial Service is also required. The chief equipment of an officer of this new department will be his knowledge and appreciation of the idiosyncracies of the people among whom he will work, and the confidence and respect he will command from them. If he lacks knowledge of technical matters he might be given opportunities to replenish it by touring in foreign countries.

The Inspector-General would require to be assisted by a staff of experts, such as a chemist, a metallurgist, a mechanical engineer, a sericulturist, a botanist, a mycologist, and so forth, each with a well-equipped laboratory and with all up-to-date books and appliances. The provincial Directors of Industries would refer to the Inspector-General all technical matters too tough for solution by themselves, and his staff ought to be able to solve them all satisfactorily. These officers will practically form an institute of Technical Sciences. To start with, one such Institute will be sufficient for the whole of India. In course of time each of the larger provinces may need an Institute of its own which will then work in unison with the Imperial Institute.

Seconding of expert to provincial departments.

An expert loaned by the Imperial Department of Industries to a provincial Government should be under the orders of the provincial Director of Industries in administrative matters, but under those of the Inspector (or Director) General of Industries in technical matters.

The existence of the Indian Science Congress is scarcely known in Assam, and I am not aware if it has so far done any good to this province.

Study of foreign methods.

Facilities may be given to experts to study methods and conditions in other countries, by paying their travelling expenses during furloughs or granting them additional furlough on condition of their submitting reports on their experiences and such reports being approved by the Inspector-General of Industries.

Reference libraries.

There is at present no reference library in the province. There should be one such library with the proposed museum at Gauhati, and the Director of Industries, if his headquarters be not at Gauhati, should be given perhaps a smaller one in his office for use of his staff. I have felt the want of scientific books very much in connection with my own work.

Besides libraries there should be an organisation for dissemination of knowledge by the publication of pamphlets and tracts in the two principal vernaculars of the province. The Director of Industries should control this organisation, perhaps jointly with the Director of Public Instruction. Government should bear the cost of publication, and the books should be sold at only a nominal price. They must not be distributed free, as people do not value what they do not pay for, and have generally a distrust for free publications.

College of commerce.

It will probably be a long time before Assam will require or be in a position to maintain a college of commerce of her own, but no doubt she will do so eventually. In matters administrative such a college should be under the Director of Public Instruction, the University prescribing the curriculum of studies. The Director of Industries will submit to the University through the Director of Public Instruction annually or periodically a report as to the quality of the education received by the graduates of the college serving under him, and the course of instruction will no doubt be varied from time to time in deference to his opinions, especially when supported by the Director of Public Instruction.

A commercial college will disseminate commercial knowledge, the want of which has so often been the root cause of failure of many an industrial enterprise; and it will supply recruits for the Industrial Department.

VIII.—Government organisation for the collection and distribution of Commercial Intelligence.

I have no personal knowledge of the system followed either by the Director of Statistics or the Director-General of Commercial Intelligence and have therefore no criticisms to offer.

The "Industrial and Trade Journal" is a fairly useful publication, but I would suggest that arrangement should be made to publish some of its articles, especially those likely to be of interest to the less educated men engaged in trade or industry, in the vernaculars of the parts of the country concerned. (*Vide* my remarks under VII.) Indian Trade Journal.

The Forest and Geological monographs are no doubt store-houses of valuable information which are bound to prove of immense value as soon as people will wake up from their lethargy, and commercial and industrial education is given the impetus it deserves. In the present state of knowledge some of these publications are beyond the comprehension of men of average education, and have therefore not been productive of much real good. A number of articles of forest produce have received attention from commercial concerns owing to the publication of forest memoirs. Special monographs.

IX.—Other forms of Government action and Organisation.

The want of transport facilities is much felt in many parts of the province and hinders industrial development to a serious extent. There are many forest areas which although well stocked with good timber are either not worked at all or not worked to the extent they might be, owing to want of transport facilities. The following railway projects are suggested:— Transport facilities.

1. A line joining Dibrugarh, Khowang, Sibsagar, Jhanji and Amguri.
2. A line linking Silghat with Jorhat and eventually extended to Jhanji.
3. As soon as (2) is constructed, if indeed not earlier, the Jorhat State Railway should be reconstructed on metre gauge in order to make through running possible between No. (2) and the Assam-Bengal Railway.
4. A railway from Tangla through Tezpur and North Lakhimpur to Dulongmukh with possibility of extension eventually to Pasighat together with a number of feeder lines extended up to the foot of the hills.
5. A line connecting Gauhati with Mahendraganj and possibly Bahadurabad, with branches to tap the Garo Hills.
6. An extension from Silchar to a point opposite Lakhipur with a branch to Monier Khal *viâ* Narsingpur and Dhalai.
7. An extension from Sylhet to Theriaghat.

Simultaneously with the construction of the above railways a well-devised system of cartroads should be made converging to the stations and touching as many forest areas and potential centres of industrial activities as may be possible.

I am not aware if anything has yet been done in this province to develop hydro-electric power. There are very good facilities for it along the southern slopes of the Khasi Hills and also round Shillong. I think it would be possible to light Sylhet, Shillong and Gauhati by harnessing a few of the streams and falls, besides making power available for other industrial purposes. Hydro-electric power.

I do not think there is much fault to find with the general policy of the Forest Department. It is the butt of much vilification in the press and sometimes even from officials of other departments, but in most cases the criticisms arise out of ignorance of the aims of the department which are entirely for the good of the people. It will be a very long time before the village folk who live in the vicinity of forests will learn to subordinate their individual interest to that of the public and to resist the temptation of taking what does not belong to them. In a country like Assam where there is forest in each district, it would be well if the text books used in the primary schools contained a few lessons explaining in simple words why forests should be conserved. The ignorance in this respect even in otherwise well-informed circles is appalling. I fully believe that if this elementary knowledge is well spread in the country, the angle of vision will undergo a material change, and the aims and endeavours of the Forest Department will begin to be appreciated. Forest Department.

So much for the *policy*. But in actual working many defects creep in, which are due to the lower ranks of Forest Subordinates being almost incredibly underpaid and the upper being generally undermanned. I know of men who are educated to the extent of being able to keep office and to carry on correspondence in English, but who have been kept on the poor pay of Rs. 20 for as many as 15 years and most of this time holding more or less independent charges. These men have a family to maintain, very often a number of children to educate, and are expected to keep up a certain amount of respectability, and all this on Rs. 20, which is scarcely enough in these hard days for a domestic servant. It is nothing short of insanity to expect these men to keep straight and to interpret by their own actions the benevolent nature of the general policy of their department. Then again supervision has in many cases been slack owing to paucity of supervising officers, so that those underpaid officials have very generally a free hand in most matters. I cannot too strongly urge that these matters be looked into without delay, for I fully believe that when these defects are remedied the unpopularity of the department will disappear.

Although otherwise rich the Assam forests have the great defect of being very mixed, that is to say, hundreds of different species of trees grow together indiscriminately of which perhaps not more than half-a-dozen have at present any marketable value. This points to the urgent necessity of making extensive plantations of only the more valuable species of trees.

As forests take many long years to grow to maturity this work should be taken in hand without delay. Plantations are doubtless costly undertakings, but the matter has become so urgent already and will be so much more so when industries receive the impetus which they deserve, that Government will be fully justified in absorbing all the surplus income of the department in making plantations for the next 30 years or so.

Methods of forest transport generally adapt themselves to the configuration of a country and the habits of its people. In Assam the chief means are elephants and buffaloes. Elephants generally drag logs, and buffaloes do that as well as draw carts laden with timber. It is therefore plain that a system of paths and cart tracks is the first desideratum for forest exploitation. These are still generally wanting in many forest tracts and should receive due attention.

It may here be mentioned that railway authorities are generally found very unwilling to provide temporary sidings where their lines traverse forest areas. This seems a very short-sighted policy on their part, for many forests are not worked at all for want of this facility, and the railway loses the freight which would have many times covered the cost of the sidings asked for.

Jail competition.

I think the jail industries are a useful institution in many ways. The jails have served to keep alive many industries which might have otherwise died out, and convicts must have some useful work to do. I am not aware if jail competition has affected any industry to an appreciable extent.

X.—General.

I cannot claim to have ever been actively concerned in any particular industry, although I had had opportunity to do something in a small way to develop timber and cane trade in one of the districts of this province. I have already said in the foregoing section what appears to me necessary for the development of timber trade.

Assam seems particularly suited for the following industries :—

1. Sericulture.
2. Handloom weaving industry.
3. Manufacture of rugs and cheap blankets from indigenous cotton.
4. Manufacture of dyes.
5. Oil-seed industry.
6. Paper-pulp industry.
7. Manufacture of cement.
8. Glass making.
9. Brass and pewter foundry.

1. Sericulture is by no means a new industry in Assam, but for various reasons it is not in a flourishing condition now. It has almost unlimited scope for expansion, for the forests of Upper Assam have an inexhaustible stock of the food plants of the *Muga* and *Eri* silk-worms.

2. Closely connected with sericulture is the weaving industry. Unlike the other provinces of India, weaving is not a caste industry in Assam. Time was when the women folk of every family in Assam wove all the articles of clothing that it required. Ladies of the highest families used to weave for recreation and to take great pride in the fineness of the fabric they used to turn out. But this is scarcely the case now. This industry therefore wants to be revived. Introduction of the fly-shuttle loom is one of the obvious ways of improving this household industry, and many other ways will doubtless suggest themselves to investigators and experts.

3. The indigenous cotton of the hills of Assam has got a woolly staple which makes it very suitable for the manufacture of cheap rugs and blankets. Before the war vast quantities of this cotton used to be exported to Germany and to return to us in the form of gaudily coloured coolie blankets. There is no reason why such articles should not be locally manufactured. Rugs of the Miri type could be easily manufactured by people outside that tribe, and I am sure no race of men will have any objection to make them if only they are shown how to do so.

4. Many dye-yielding plants are indigenous in this province and all of them could be very easily cultivated if demand rose for larger quantities than are at present brought into use. With the aid of tinctorial chemistry dyes of much better quality than what is obtained by the more or less crude indigenous methods would no doubt be produced.

5. Assam produces vast quantities of mustard seed as well as sesame, the bulk of which is exported to other provinces. It would be to the advantage of the province to retain these oil seeds by establishing oil-crushing factories at suitable centres.

6. The vast savannah areas along the banks of the Brahmaputra and its larger tributaries are almost an inexhaustible source of paper-pulp stock which ought to be utilised. Also there are hundreds of species of soft-wooded trees in our forests which are not suitable for use as timber but would be excellent for paper-pulp.

7. Along the southern scarp of the Khasi Hills there are outcrops of lime-stone deposits. The lime is of a hydraulic character having the necessary admixture of clay. It therefore ought to be very suitable for the manufacture of cement. If a factory is established near the foot of the hills it could very easily use water power for its mills as well as plenty of water for its tanks. This matter deserves a careful investigation.

8. In many parts of the Khasi Hills there are strata of soft white quartzite, which, I think, would be suitable for glass making.

9. This also is by no means a new industry for Assam, but owing to outside competition and especially to want of knowledge of scientific methods, it is now in a moribund condition. Pewter workers labour under many absurd superstitions which must be dispelled by demonstrating to them how any amount of heat can be obtained without using rotten water-logged wood as fuel.

ORAL EVIDENCE, 9TH JANUARY 1918.

The Hon'ble Sir R. N. Mookerjee.—*Q.* There are one or two points on which I should like you to tell us more fully, first as regards what should be done to improve village industries: can you suggest any methods as to how that should be done?—*A.* Improved methods of weaving might be introduced, that is one thing. Improved methods of pottery might be introduced. There are men of the potter class in parts of Assam who live in villages almost entirely by themselves. They don't know even the use of the wheel for making pots, they do it all by hand, and they sometimes make beautiful things.

Q. In the next paragraph you speak about the financing of cottage industries; do you think that co-operative banks will be sufficient to finance all these cottage industries?—*A.* They will, I think, be sufficient in most cases.

Q. What is the amount of capital in your present co-operative banks?—*A.* I have no knowledge of that, but I know that the present banks are inadequate.

Q. They cannot go outside their co-operative societies; that is, unless one belongs to a co-operative society they cannot advance money to him?—*A.* I think I have said somewhere in my note that there should be co-operative banks, one in each *mouza*, if possible.

Q. That will take some time, but at this stage don't you think that Government could lend money like what they call *takkavi* loans recoverable in instalments?—*A.* Yes, that could be done.

Q. It will take sometime, will it not, before co-operative banks could be established throughout Assam?—*A.* I do not mean that they should be established all at once, but gradually; the aim would be to increase the number of co-operative banks. At present there are very few in Assam, the sub-divisional towns have not got any so far.

Q. There is one other point I would like to have cleared by you: we received a complaint from Mr. Byrne about the forest regulations; it would seem that you are closely connected with that complaint; in fact he had made some charges against you. Would you kindly let us know what was the exact nature of the complaint?—*A.* There were two or three complaints. One was about the privilege of felling trees in the forests without having them previously marked as is the custom: he would simply send his men into the forest and let them cut whatever they wished and take them away without let or hindrance from the forest, and that was objected to. He had been given a monopoly to fell *simul* trees in Darrang and Nowgong, but his men were felling in Sibsagar; that was another ground for objecting.

Q. What I particularly want to know is whether according to your rules you could not have been a little more lenient and allowed his work to go on, without losing the revenue of the Forest Department, instead of having a hard and fast rule and thereby compelling him to close his workshop?—*A.* Unless ordinary precautionary rules are obeyed, it is quite impossible to preserve the forests.

Q. But in a case like that there may be some relaxation?—*A.* In his particular case I should say that he had no grounds to enter the Sibsagar district. That was my idea because his agreement did not include Sibsagar. I had previous correspondence with him and it was stipulated that he should send his permits to me so that I might check them. He did not do that, that was the difficulty.

Mr. C. E. Low.—*Q.* On the other hand he complained that the Forest Department took a tremendous lot of time to mark the trees that he wanted?—*A.* So far as I was concerned I waived the right to mark his trees provided he cut only the trees which he was given permits for, and had them marked with his own hammer by his own men, so that my men might check the number of trees actually taken out under those permits and make sure that people did not steal trees from the same area.

Hon'ble Sir R. N. Mookerjee.—*Q.* Of course you are conversant with the Forest rules and also this complaint: do you think that some alteration should be made in the rules to allow

these commercial people to go on with their work without stoppage? *A.* Certainly it is done in certain other divisions and in favour of traders and others who have a *bonâ fide* complaint to make; for instance in Cachar and Sylhet people generally go into the forest and cut the trees they want provided that they produce permits; something might be done that way; but Mr. Byrne agreed to do certain things, but, so far as my Division was concerned, never did so.

Q. Apart from Mr. Byrne's case what we understand from his evidence and other evidence is that a little relaxation from the present rules would enable people to transact their work to the advantage of both themselves and Government?—*A.* Yes, as I just said, in Sylhet and Cachar the rules are relaxed.

Q. In this case it was not relaxed?—*A.* The rules do not apply to him because he did not comply with the request of the Forest Department. He was asked to send his permits to the Forest officer, but he did not do that.

Sir F. H. Stewart.—*Q.* You said just now that a little relaxation is possible?—*A.* Yes, in particular places of course where no danger of abuse of such relaxation is apprehended.

Mr. C. E. Low.—*Q.* Can you say what the general departmental policy in Assam is? Have you got working plans framed here for all or most of your forests?—*A.* No, we have got working plans for very few of the forests here; that is owing to want of a sustained demand; there is not a large demand excepting for a few things, and even the few working plans that have been framed are not wholly workable.

Q. Your forests are not fully exploited?—*A.* When a working plan is framed, there will be certain rules and restrictions placed on the working, which the people generally find too irksome owing to the nature of the forests. In Assam our forests are very mixed; there may be several hundreds of species composing one forest of which only one or two may have a marketable value, and to find these out people have to travel from place to place; when one tree is felled, they have to go half a mile to find out another tree of the same kind; that is very difficult, they do not like to do that, I mean to say on a large scale.

Q. Do you auction coupes?—*A.* It is only in one case that it was possible under a working plan that I had made, namely, in Sibsagar, where we used to sell coupes for two or three years. That was the only instance in Assam of selling coupes standing.

Q. Do you have any departmental exploitation of any forests?—*A.* We began also in Sibsagar to exploit one species, namely, *ajhar*; we began with *nahor*, but the railway people did not like to have much *nahor*.

Q. I suppose it is very largely a question of means of transport?—*A.* Yes, of course in Assam it is very difficult owing to the mixed nature of the forests to exploit with much profit on a large scale.

Q. Generally is your forest very well served by waterways? Are there waterways through most of your forests?—*A.* Floatable waterways abound in Sylhet and Cachar, but in the Brahmaputra Valley there are not very many, and another thing is that our timbers are mostly too heavy to float. In Cachar for floating down heavy timbers they have got this advantage, that there are plenty of bamboos for rafts to float the timber, which we have not got in Assam.

Q. Has any survey been made of existing waterways to see whether they could be improved by removing snags?—*A.* This is done under contract in Cachar.

Q. But has no definite survey been made in any particular case to see whether it could be done?—*A.* No.

Q. Have you any hill forests which require ropeways or anything of that sort?—*A.* Yes, in the Khasia hills we have many hill forests, also in the North Cachar hills, and also in the Lushai hills.

Q. What do you think of a scheme to appoint forest engineers to consider this kind of question?—*A.* For Assam or for the whole of India?

Q. With special reference to Assam.—*A.* In Assam there would not be work for more than six months. In six months or at the most a year the forest engineer ought to be able to know what things are possible; so a permanent man would not be necessary.

Q. Not necessary?—*A.* No. The Forest officers are engineers to a certain extent; they know forest exploiting work fairly well; they only require occasional advice.

Q. But it is rather a specialised type of work, for instance ropeways, isn't that so?—*A.* Ropeways have been put up and successfully worked by Forest Officers in the North-West Himalayas without any assistance from experts. I therefore think that if there be an expert for the whole of India, he could make occasional tours and advise local forest officers on works of a very special nature; that would be quite sufficient so far as Assam was concerned.

Q. The Forest Department had an unfortunate experience in engineering in the Central Provinces; they were asked to make tanks for the supply of water for animal grazing, and most of the tanks that the Forest Department made refused to hold water; they then said that they wanted the Irrigation people to do it?—*A.* That is a special kind of work that has

not been particularly taught in the Forest College or at Cooper's Hill; for such particular kinds of work occasional advice from an all-India man would be sufficient, I think.

Q. Are there any particular places where you think ropeways could be put down with advantage?—*A.* Yes, I should mention the Bhuban hill.

Q. Where is that?—*A.* In Cachar.

Q. I am not concerned with a particular place; but are there many such places?—*A.* There are not very many. There again the fault lies with the nature of our forests; the forest is very mixed; you fix a ropeway at one place, the work there will be over say in about two months, and then you have to shift it on again to some other place.

Q. What is your view on the subject of plantations especially of *simul* wood for tea boxes?—*A.* Yes, that is a good thing.

Q. Do you think it is practicable?—*A.* Oh, yes.

Q. I understand *simul* grows very rapidly in these areas?—*A.* Yes, in favourable localities *simul* will grow about 5 feet a year in length and two inches in diameter.

Q. What is the reasonable growth for tea boxes, 4 to 5 feet?—*A.* Four to 5 feet would be too small perhaps. I mean to say that it would be rather wasteful to fell trees of that size.

Q. How much then?—*A.* For *simul* I should think not less than 8 feet.

Q. How long do you suppose it will take to grow *simul* up to that size in alluvial areas?—*A.* In Assam about 50 or 60 years.

Q. Is the local *simul* wood suitable for matches?—*A.* I did not try the local wood, but elsewhere it is very suitable, and I do not think there will be any difference in quality.

Q. Did you hear of the trouble about the Bareilly factory when you were in Dehra Dun?—*A.* I had not gone into the details of the Bareilly factory, but I know the *simul* areas in its neighbourhood.

Q. Probably smaller trees would do for tea boxes?—*A.* The tea box industry would not refuse to have small trees, but it would be very wasteful for the department to fell small trees for that purpose; anything above 9 inches diameter would be quite sufficient for tea boxes.

Q. In your note in speaking of an Imperial Department of Industries perhaps consciously or unconsciously you rather follow the analogy of the Forest Department, with an Inspector General and a technical staff; but you will, I think, admit that there are certain differences in kind between industries and the work of the Forest Department, in that industries, especially large industries, are much more alike all over India than forest problems are; forest problems are different in different places, and therefore in the matter of large industries there would probably be more a case for an Imperial Department, while in the case of cottage industries the problems probably are more local; would you accept that position?—*A.* Yes.

Q. With regard to large factories they could be investigated, and, if necessary, experimented on by an Imperial Department with a good deal of saving in running because the problems are much more similar in all parts of India?—*A.* But could not they assist local people with their advice and instructions? They need not experiment in every province, but they might gain their experience in one province, and apply it to other provinces through the local officers.

Q. That could no doubt be done, but there would probably be provincial difficulties?—*A.* I do not know, but I understand that the provincial people are sometimes rather impatient of interference.

Q. I put to you one particular case—the case of the glass industry: you don't want one single expert; no single man can be expert in all the questions that have to be taken up in investigating glass; you want a man to be a chemist to deal with raw material, and you want somebody to consider the question of the cost and movement of the raw materials, and of the manufactured article to where the markets are; you want another man for furnace work, another in charge of the crucibles, and another man for blowing, and so on; it would be very uneconomical for each province to have all of them, so that, if, as you suggest, a single province took it up before they had made investigations, they could not find out in which province the prospects are most favourable?—*A.* I quite follow, but what applies to glass won't apply to forest produce. I would restrict my views to forest produce alone.

Q. You are referring to an Imperial Department of Industries and you propose a staff of experts with an Inspector General, such as a chemist, a metallurgist, a mechanical engineer, and so on; it struck me that you are following the analogy of the Forest Department; of course one naturally confines oneself to what one knows?—*A.* Yes, quite so. As I believe, the Forest Research Institute, so far at least as its organisation is concerned, has not yet been found fault with.

Mr. A. Chatterton.—*Q.* In the last paragraph of your note you say that brass making is not a new industry in Assam?—*A.* I am referring there to pewter.

Q. What is this pewter work?—*A.* They make vessels, utensils and other things for local household use. It is brass work of a sort.

Q. I am not speaking about brass but pewter: What is this pewter for?—*A.* For making vessels and household plates.

Q. Is it a mixture of lead and tin?—*A.* Tin and copper I think; it is what they call *kansa.*

Q. Is it bell metal that you are referring to?—*A.* Yes. I am sorry for the misapplication of the word.

Q. What are the methods of extracting timber which they employ in the areas which are worked by the saw mill companies?—*A.* In the division where I was, that is in Sibsagar, there was no saw mill, but in Cachar, as I have already said, the timber logs are floated down to the mill.

Q. How do they get the logs into the river?—*A.* They are dragged by elephants.

Q. Do they cut the trunk into small logs?—*A.* Yes, into manageable sizes. No particular size is prescribed, but they cut it into convenient sizes.

Q. What do you call a convenient size?—*A.* 15 to 20 feet long.

Q. How many cubic feet?—*A.* It may be about 20 to 60 cubic feet each.

Q. Are elephants freely available for dragging timber?—*A.* They make use of elephants in Cachar.

Q. Do you call that method efficient?—*A.* They might adopt a more efficient method, but then again the forest is at fault: you cannot make a sledge or any such thing because you will then have to shift it from place to place at short intervals.

Q. You said that it would take 35 to 50 years to grow *simul* wood suitable for tea boxes: is there a sufficiently large stock of *simul* wood in the Assam forests to supply the tea industry?—*A.* At present I do not think there is. The present stock is not sufficient.

Q. Is there any possibility of *simul* plantations being started?—*A.* Yes, in the North-East Frontier district they have, I think, been started already.

Q. Have you any knowledge of the saw mills that are working in the Assam Valley?—*A.* Not a very intimate knowledge because saw mills are only found in two districts and I had never held charge of those two districts.

Q. You don't know whether they have up-to-date plant or whether their working is inefficient?—*A.* I could not give any opinion on that point. I think I have laid some stress somewhere in my note on the Forest Department beginning extensive plantations. I have said somewhere that I consider that very important from an economic point of view.

Sir F. H. Stewart.—*Q.* How long have you been in this province?—*A.* Off and on I have been about 34 years now.

Q. Of which you have been for 18 years in Dehra Dun?—*A.* Yes.

Q. Do you think there is any possibility of the Assamese ever taking to factory labour?—*A.* They are very averse from work in the factories as coolies.

Q. Do you see any prospect of that being overcome gradually, or do you think that will remain?—*A.* That will remain for many years to come, I am afraid.

Q. Do you see any prospect of these cottage industries like weaving and so forth being preserved and developed so as to give the workers a fair livelihood?—*A.* Yes, they have a great liking for the indigenous industries, but owing to outside competition, they are dying out. They have natural aptitude for these and are only lacking in organisation. Weaving of course is not restricted to any particular class; in Assam it is resorted to by the women of all castes and stations in life.

Q. Do the Assamese work on the tea gardens to any extent?—*A.* Not as coolies.

Q. Do they object to work as coolies?—*A.* They do not like to work under control; they don't like to work as coolies, and they have got a rooted hatred for the outside coolies that are imported for work in Assam, and to be mixed up with these people on the same level they cannot tolerate.

Q. You say that all lands required for *bonâ fide* industrial purposes should be acquired by Government for the organisers at their cost, and the Land Acquisition Act if necessary should be so amended as to make this possible: do you think that any special amendment is needed?—*A.* I did not consult the Act, but in Assam all land belongs originally to Govenrment and there are some temporary holders of these lands; some rules might be made probably under the Land Acquisition Act to meet the claims of these intermediate holders.

Q. What sort of claims?—*A.* I mean to say they ought to compensate them in a suitable way; they have cut out the jungle and levelled the lands for cultivation purposes; so some compensation might be made for that; that of course would be done in any case.

Q. You are in favour of having a local Director of Industries in Assam and you don't see any use in an advisory board: is that because there are not people who could serve usefully on such a board?—*A.* There is not sufficient scope for that.

Q. There are a great many industries or possible industries, you mention a lot of them, which a Director of Industries can busy himself with : would not an advisory board help him a good deal?—*A.* But could he not get advice from the Imperial Board, the Board of the Indian Government? It is only occasional advice that he and his assistants would require.

Q. It has been put to us at some other place that an advisory board might be specially useful perhaps in helping to maintain and develop these cottage industries : what do you think about that? If they are people interested in weaving or something of that sort, they might give the weavers valuable information and suggestions as to what way they should go about their work and so on?—*A.* Village people would be best approached by local Inspectors and other officers under the local Director.

Q. You think it would be better to have all of them officials?—*A.* Yes.

Q. With reference to the work of the Forest Department you strongly hold that the subordinates are very badly underpaid?—*A.* Certainly.

Q. And in the higher grades the service is very much undermanned?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee,—*Q.* Do you think that the subordinates of the Forest Department are more dishonest than the subordinates of other Government Departments?—*A.* I have not got a very intimate knowledge of subordinates of other departments.

Q. In your own department unless the man who wants trees tips one or two rupees there is great difficulty about felling his trees, and all sorts of difficulties are put in his way, is that not so generally?—*A.* I do not think it is quite so bad as that; but the Forest officer in Assam has got rather a very extensive charge and he cannot be present everywhere; there again the nature of the forest is at fault; a man has to travel miles and miles to mark one single tree, and there may be times at which there are several people wanting trees, and to meet all their demands he would have to walk miles and miles in opposite directions.

Q. In your long experience have you received complaints, and have you made enquiries to find out whether it is true?—*A.* Very rarely from outside.

Q. Or you would not take notice of such complaints?—*A.* I had only two cases of such complaints from outside. They were, however, not proved to my satisfaction, and in one case I introduced some changes in the method of working and transferred the man complained against to a different kind of work in another part of the district, and in the other case I reprimanded the subordinate concerned.

Sir F. H. Stewart.—*Q.* You speak about many dye-yielding plants that are indigenous in this province : have you made experiments with these plants?—*A.* I did not do them myself.

Q. Have any been made in this province by Government or by private individuals?—*A.* People use a lot of indigenous dyes still; for instance on the Manipur side the Nagas dye their cloth blue and red. No experiments have been made yet to my knowledge. They should be made by a trained chemist.

Mr. C. E. Low.—*Q.* A witness who has not appeared before us as yet, the proprietor of a saw mill in the Surma Valley, has made the following remarks:—"In the past there were many saw mills in the Surma Valley all of which had to obtain their supplies of logs from small traders, and with the exception of two mills all mills had to be closed down. All these failures were due to excessive royalties payable to Government on the timber extracted, and consequently to their inability to keep to their contracts through no cause of their own." I suppose the witness means that the small traders from whom he got logs could not keep to their contracts?—*A.* Yes, I think so.

Q. And then he goes on to say "the royalties charged by Government on this class of evergreens is simply iniquitous. The royalties payable on the timber extracted amount to about 14 to 57 per cent. of the actual cost price of logs." What have you to say about these statements?—*A.* He does not mention any particular kinds of timber. In Sylhet and Cachar they have got various qualities of timber, so if saw-mill owners want to use superior kinds of timber for tea-boxes of course the price becomes high.

Q. What he says is that the royalty is too high : owing to high royalties the mills have been closed; and he goes on to say that these royalties bear a very high proportion of the cost price, whatever that means, of the logs : of course the royalty is the cost price of the logs; do you consider, generally speaking, that the royalties charged to saw mills are too high?—*A.* I was in charge of the Cachar division for only a short time, but taking the general timber market into consideration the royalty charged in that division did not strike me as too high.

Q. I am not referring only to the Surma Valley, I am referring to Assam generally?—*A.* In Assam the rate so far as tea boxes are concerned is fixed at so much per box; there has been no complaint; the box rate is one anna per box; that is low enough.

Q. What is the selling price?—*A.* About 14 annas. A man could not get a box of that kind at less than 14 annas in the bazar.

Hon'ble Sir R. N. Mookerjee.—*Q.* Have you any idea of the cost of making it?—*A.* It won't be very much, scarcely four annas a box.

WITNESS No. 410.

THE ASSAM PROVINCIAL INDUSTRIAL COMMITTEE.

ORAL EVIDENCE, 10TH JANUARY 1918.

The following members of the Committee were present at the conference :—

1. The Hon'ble Lieutenant-Colonel P. R. T. Gurdon, C.S.I.,
2. The Hon'ble Mr, J. R. Cunningham,
3. Mr. J. McSwiney, I.C.S.,
4. Mr. F. E. Bull,
5. Mr. A. W. Blunt,
6. Mr. E. P. Gilman,
7. The Hon'ble Mr. A. W. Botham, I.C.S.,
8. Mr. A. R. Edwards, I.C.S.
9. The Hon'ble Rai Ghanasyam Barua Bahadur,
10. The Hon'ble Syed Abdul Majid, Khan Bahadur,
11. The Hon'ble Maulvi Syed Saadulla, Bar-at-Law,
12. Rai Sahib Monomohan Lahiri, B.L.,
13. Rai Bahadur Kanak Lal Barua, B.L., and
14. Mr. S. N. Mackenzie, I.C.S.

The discussion was based on the Resolutions passed at the second meeting of the Assam Provincial Industrial Committee held at Gauhati on the 15th November 1916.

Resolution I.—That a station or stations for the supply of good seeds of the different varieties of silk should be opened by Government under expert local supervision which should have available the advice and guidance of an Imperial expert in Sericulture.

In reply to the President (Sir R. N. Mookerjee) the Hon'ble Mr. Botham said that nothing had been done in the direction suggested by the first resolution owing to want of funds, and of an industrial officer. In reply to Sir Francis Stewart he said that they had not decided where to open the seed station or stations pending the appointment of the industrial officer.

Mr. McSwiney said that he was not in favour of a central station in connection with silk because they would have to have, as Mr. Lefroy had recommended, different stations for the different kinds of seeds. Mr. Lefroy himself had suggested Shillong as a suitable place for *pat* silk and for *eri* and *muga* silk either Nongpoh or some other place.

The Hon'ble Mr. Botham at this stage drew attention to the wording of the resolution which run as follows, " a station or stations."

The Hon'ble Rai Bahadur Ghanasyam Barua said that he was very much in favour of establishing one or more stations because the silk industry was a very promising industry in Assam and there were certain varieties of silk which were not available anywhere else. *Eri* and *muga* were not available anywhere else and they promised a very wide field for action, but were suffering a great deal for want of good seed. He thought that it was essential for the advancement of the silk industry in Assam that stations scientifically run and aided by expert advice should be established for the supply of seed and for the improvement of the industry under expert advice.

The Hon'ble Syed Maulvi Saadulla did not think that the mere supply of seed would do. He saw from the report of the Special Officer that the mulberry tree in Assam suffered very badly from the attack of a borer, and unless they could tackle that pest mere establishment of stations for the supply of seed would not do.

The Hon'ble Mr. Botham said that that applied to *pat* only and did not apply to *eri* and *muga*. *Eri* and *muga* worms were afflicted with disease and in order to stop that they would have to start a central station for the distribution of disease free seed and the mere fact that the borer played upon the mulberry tree would not affect the point.

The Hon'ble Maulvi Syed Saadulla said that his point was that they should not rest content with giving good seed but they should try to tackle the diseases. In reply to Mr. Chatterton he said that shrub mulberry was not grown in Assam though it used to be grown before in Shillong.

The Hon'ble Rai Ghanasyam Barua Bahadur was strongly of opinion that the establishment of this station should not be delayed and that some beginning should be made. At present all the available cocoons were exported and there was a large field for development.

Resolution II.—That a central weaving school or schools should be established for teaching improved methods of spinning, reeling and weaving and introducing improved looms and other machinery.

In reply to the President, the Hon'ble Mr. Botham said that no effect had been given to this resolution.

The Hon'ble Maulvi Syed Saadulla thought that the establishment of such schools was an imperative necessity and they should be started at once.

Mr. Low asked what were the improved methods that the proposed schools were intended to teach. The Hon'ble Mr. Botham replied that that was one of the things on which they wanted a special officer to advise them. He could not say whether these improved methods were known anywhere else in India.

The Hon'ble Rai Ghanasyam Barua said that spinning and weaving in Assam were done by hand.

Sir Francis Stewart asked what sort of special officer they wanted, whether he should be a business man or an expert or what.

Mr. Low said that they might pick up a kind of expert who would deal with the most important local industry for the time being and make him the special officer, because if they had an officer of the Assam Government on special duty he did not add anything to the existing knowledge but if they had an expert with administrative abilities he would be all that could be desired.

The Hon'ble Rai Ghanasyam Barua wanted either an expert or a local man who could go into the villages and show how to develop the cottage industries.

Mr. Low said that they could train local men eventually by having some junior local men in the local industrial department and when they learnt enough about the industry they could take higher posts in the department. He asked whether there were any Assamese experts at present. The Hon'ble Maulvi Syed Saadulla replied that they had not any but they had a peripatetic weaving inspector who was a Bengali.

Mr. Low said that they saw his demonstrations and they were not quite sure whether he was learning or teaching weaving.

Mr. McSwiney said that that demonstrator was employed by the local board and not by Government. In reply to Lieutenant-Colonel Gurdon he said that the weaving master was employed by Government but the demonstrator by the local board.

In reply to a question whether it was not possible to get an Assamese as weaving master and train him up at Serampore and why it was found necessary to employ a foreigner, Mr. McSwiney said that they could not get an Assamese and half the population of the Province was not Assamese.

Rai Bahadur Kanak Lal Barua said that the demonstrators were trained for some time at Serampore.

Mr. Low thought that it was very important that they should have Assamese demonstrators for an industry which is run by Assamese.

Rai Bahadur Kanak Lal Barua said that his idea was that they ought to have a school at least to train demonstrators because at Serampore the training given was only with regard to cotton weaving whereas silk weaving was a speciality in Assam and was not to be learnt at Serampore.

Mr. Chatterton asked whether it would be any use to send a man to Serampore for a course of weaving which would result in merely the acquisition of a superficial knowledge of the craft.

Mr. Low was of opinion, speaking from his experience in the Agricultural Department, that it was very much better to have no demonstrator at all than to have a bad one, because a bad demonstration would evoke prejudice which would take years to overcome.

Rai Sahib Monomohan Lahiri said that a man was sent from the Tezpur local board to Serampore to be trained and when he returned after six months he could not do anything.

Lieutenant-Colonel Gurdon said that that pointed to the necessity of having a weaving school in Assam or in Gauhati.

Mr. Edwards was of opinion that a certain amount of research as to the best means of weaving and reeling was necessary before they began to teach it.

Rai Bahadur Kanak Lal Barua thought that the research portion could be done by the Imperial Department.

Mr. Chatterton said that there was no difficulty about reeling *muga*, but when they came to weaving with *eri* silk and spinning of *eri* silk it was quite a different matter. It would be an advantage to the province to have a spinning mill up in Assam for dealing with the large quantity of *eri* silk cocoons.

Mr. Low said that it would be objected to because that would interfere with the existing industry of the Bombay mills.

Rai Bahadur Kanak Lal Barua said that it would reduce the price of yarn in Assam.

Resolution III.—That carpentry, smithy and similar established crafts should be encouraged by a system of small stipends to apprentices in approved shops subject to certain conditions as to inspection and supervision by Government.

In reply to the President the Hon'ble Mr. Botham said that apprentices were being given stipends. The President also asked whether there were any night schools or any school where they could attend. The Hon'ble Mr. Botham replied that there were none partly

because the apprentices were very few in number. He thought that five or six stipends were given in a year and the apprentices were sent to different places and it would be difficult to organise any sort of a night school for them.

Rai Bahadur Kanak Lal Barua said that the apprentices went into the various railway workshops and after the course -as far as he knew—they were absorbed in those shops. The stipends lasted for three years.

Mr. Low asked whether the stipends were given only to men who had had a small amount of primary education. The Hon'ble Mr. Cunningham said that no qualification was laid down. Mr. Bull also thought that there was no educational qualification laid down as a condition to the stipend. The Hon'ble Mr. Cunningham said that it was a very small thing, that the Williamson Endowment Fund stipends were scarcely worth consideration and that it was not taken up as a part of a general system. It might be possible to make primary education a sort of condition for the grant of the stipends but he was doubtful whether, if any educational qualifications had been insisted on, they would have trained any artisans at all.

The President said that in all the other provinces the apprentices were required to have had a certain amount of education.

Mr. Low said that in the Central Provinces they insisted on primary education for intending carpenters and blacksmiths.

The Hon'ble Mr. Cunningham said that there was a difficulty in introducing such conditions. They had, for example, sub-overseer classes many years ago at Jorhat and the qualification required was the entrance examination or an examination even short of that, but those classes had to be closed for want of pupils although stipends were granted. Things were changing of course and if the organisation of the apprenticeship system were practicable with reference to the market and the prospects of employment he had no doubt that an educational standard could be insisted on as a preliminary to the apprentices getting these stipends.

Mr. Low asked whether an apprentice was likely to be of any good or become anything more than a mere mechanic of the poorest type if he did not know to read and write.

Rai Sahib Monomohan Lahiri said that the apprentices of Tezpur knew to read and write. He saw an apprentice after his course, at one of the tea estates working as a mechanical engineer.

Mr. Bull stated that for a certain scholarship the literary qualification required was the middle vernacular which he believed was not very high, but pupils possessing that qualification did not come forward, and therefore the scholarship was given up. The only people that they could get now were supposed to be men who are working with their hands.

Mr. Low said that in the Central Provinces they insisted on the 4th standard as the preliminary qualification.

Mr. Gilman was of opinion that if possible all apprenticeships should be on English lines and should be for, say, three years, with nominal pay till they became proficient and able to do a fair day's work.

Rai Sahib Monomohan Lahiri said that the apprenticeship system was not a success. When the apprentices left the shops they had no work to do. In the tea gardens the proprietors managed with cheap coolies. The apprentices were simply taught turning and foundry work and they could not do anything when they left the workshops. They must be taught to manufacture articles of cutlery, knives and all those things; there was a great demand for knives because every Assamese required a knife. The apprentices are not taught these things but they were attached to big workshops where they use machinery which they could not find anywhere else in Assam. There were no factories except the railway shops in Assam.

In reply to Mr. Low who asked whether all the apprentices were sent to the railway workshops the Hon'ble Mr. Botham said that some were sent to a private engineering firm, that of Messrs. Ede Bros., and also to the motor works.

In reply to the President whether Government keeps any supervision over the apprentices during their periods of training the Hon'ble Mr. Botham said that there were regulations for their supervision. The Hon'ble Mr. Cunningham said that there was a yearly report to the Public Works Department so far as he could remember, from the shops to whom the apprentices were sent.

The President wanted to know whether if a student did not work properly he was deprived of the stipend or whether he was first given a warning.

The Hon'ble Maulvi Syed Saadulla said that the stipends did not come from Government but from a fund known as the Williamson's Endowment Fund. It was a private fund out of which the stipends were given and it was not Government money. The grant of stipends was decided by the Government.

The Hon'ble Mr. Botham said that there was a set of rules regulating the grant.

Rai Sahib Monomohan Lahiri said that even in the first year of the course the apprentices were paid because labour was very dear in Assam.

Mr. Low asked the committee whether they would consider that there ought to be some system of compulsion for apprentices or whether there ought to be some law preventing other people from taking them into their employment during the period of apprenticeship.

The Hon'ble Mr. Cunningham stated that the whole question related to employment. Even with regard to such few industrial ventures as Europeans had attempted in Assam, the difficulty was to find employment for the men afterwards. The stipends should be made more attractive.

Rai Sahib Monomohan Lahiri said that there were no openings for the apprentices. In fact, only Rs. 7 was paid as stipend. In his own factory whenever he took a man he paid him Rs. 14 in the beginning when he did not know anything. A cooly earned eight annas a day and worked only six hours.

Resolution IV.—That Mr. Keventer be invited to visit Sorbhog with the object of establishing a dairy there and that he be invited to give evidence before the Commission.

Colonel Gurdon said that a dairy has been established more or less at Sorbhog but nothing else has been done by Mr. Keventer. So far as Mr. Keventer was concerned, Colonel Gurdon thought he was very disappointing.

Resolution V.—That in the case of gold and silver work and similar crafts encouragement should take the form of stipends to apprentices.

Rai Bahadur Kanak Lal Barua said that some stipends had already been granted by some local boards. The apprentices were sent to Calcutta.

As regards the suggestion of the committee for an iron industry the President asked whether they wanted an iron industry it Assam. In would require a very large outlay of capital, not less than four crores of rupees.

Rai Sahib Monomohan Lahiri said that they wanted it for cutlery and implements.

The Hon'ble Maulvi Syed Saadulla wanted to know whether smithy included cutlery. He thought that there was a great field for some trade in cutlery in the Surma Valley. When the matter was placed before the last Committee the wording of this resolution stood in the way of having a demonstration factory in iron and steel in Sylhet. The committee was opposed to a demonstration factory for improved cutlery and implements on the ground of the third resolution. He was not in the committee before and therefore he did not know what it meant when it passed the resolutions.

The Hon'ble Syed Abdul Majid said that some *kamars* in the Sarma Valley could turn out very good things and if improved methods were introduced they could make their own machinery instead of seeking for employment elsewhere.

Rai Sahib Monomohan Lahiri said that when he first came to Assam forty years ago he saw ordinary knives made by the Assamese people sold in the bazaar but they were not to be found now. They were ousted by German cutlery.

Resolution VI.—That the Committee regard the following as promising fields for new industries in Assam :—

(*a*) *Sugar manufacture.*—An interesting experiment in the cultivation of sugarcane on a commercial scale is now in progress in Kamrup.

(*b*) *Paper manufacture.*—Experiments are being made by Messrs. Pearson and Hole in the manufacture of paper from Assam reeds and grasses.

(*c*) *Portland cement.*—The raw material, good lime, and clay, exist in Assam and there is reason to suppose that an important industry might be created.

(*d*) *Manufacture of matches and match boxes.*—The supply of timber in Assam indicates the possibility of inaugurating this industry. Expert enquiry, however, is necessary.

(*e*) *Manufacture of vegetable dyes.*—A great wealth of raw materials exists in Assam. Expert enquiry is necessary here also.

(*f*) *Glass making.*—The existence of quartz, limestone and coal in Assam renders it worth while investigating the suitability of local materials.

(*g*) Manufacture of turpentine and resin from pines.

As regards timber for matches, in reply to Mr. Low, Mr. Blunt said that he did not think that there were many suitable species. Those that were suitable were all required for tea boxes. He also said that steps were being taken to increase the supply of *Bombax* by plantation and it was promising. They were able to get fairly large homogeneous areas for its plantation. It would take about 20 or 25 years to grow to the size which was likely to be required.

With reference to Portland cement, in reply to the President, the Hon'ble Mr. Botham said that there was coal available for the production of cement at Cherrapunji. Mr. Bull said that there was coal up in the Khasia hills but the difficulty was climate. It has not been ascertained whether it was possible to manufacture Portland cement in the damp climate where the essential things are found. If it had been a commercial possibility it would have been undertaken by private enterprise before. Generally nothing had been done to ascertain whether it was possible to combat the Assam climate.

The President wanted to know the annual consumption of cement in Assam itself because after all if they manufactured cement in Assam they might not be able to compete with the cement coming from England, Katni and other places. There must be a good field in Assam itself before they thought of launching on such a big enterprise.

Mr. Bull said that if it was possible to manufacture cement at Katni and bring it to Calcutta at great cost, there was an opening for it certainly in a place nearer Calcutta.

The President remarked that transmission facilities from Katni to Calcutta were easier than from Cherrapunji to Calcutta. Mr. Bull replied that there was river transport all the way from Cherrapunji to Calcutta. As regards the Mikir hills where the climate was probably much drier, Mr. Bull stated that there was no clay there. The great advantage of the Assam country was that they have lime, coal and clay near one another. In reply to Sir Francis Stewart he said that the clay had not been yet tested as to its suitability. Nothing had been done in the matter of investigation. It was only a question of possibility. He imagined that if the question were taken up it would be a question of funds and nothing else. They had not got any expert. The lime had been tested for other purposes than for the manufacture of Portland cement. There was no question about the value of the lime. It was the same sort of limestone that was used for the manufacture of cement at other places.

The Hon'ble Maulvi Syed Saadulla drew attention to paragraph 3, Section III of the Special Officer's Report where it was said that a certain gentleman had made experiments in the direction of making cement. The Hon'ble Mr. Botham said that it was done on a very small scale. All the items referred to in this Resolution needed expert advice at first.

Resolution VII.—That the Committee approve of the Local Administration's proposal that an officer of the Provincial Service should be appointed as a Superintendent of Industries working in close touch with the Registrar of Co-operative Societies. That they also approve of the proposal, which has been made that, pending the issue of orders on this proposal the present Special Officer should be retained on a temporary basis to carry on the work of investigating and encouraging local industries.

In reply to Sir Francis Stewart the Hon'ble Mr. Botham stated that this resolution endorsed the Government's proposals up to date.

The Hon'ble Maulvi Syed Saadulla stated that from the people's point of view he did not think that there was a necessity for two officers, one the Superintendent of Industries and the other, the Director of Industries.

The Hon'ble Mr. Botham explained that the creation of a Director of Industries was a different proposal altogether. The original proposal of the local Government was that there should be a single officer as Registrar of Co-operative Societies and Director of Industries. But after the publication of the Co-operation Committee's Report the Chief Commissioner accepted the view of the Committee that a whole-time officer was absolutely necessary for co-operation and then he proposed that the Registrar should be a whole-time officer but under him one branch of his work should be looked after by an officer who might be the Superintendent of Industries. The Registrar of Co-operative Societies was not a whole-time officer now but he had the excise and registration departments under him. Formerly the proposal was that the Registrar of Co-operative Societies and the Director of Industries should be the same person.

Sir Francis Stewart remarked that proposals had been made in other parts of India that the Registrar of Co-operative Societies should come under the Department of Industries if possible and not as the Hon'ble Mr. Botham suggested.

The Hon'ble Mr. Botham said that the Superintendent of Industries would be entirely in connection with small village industries and the principle of co-operation would be his principal means of working.

Sir Francis Stewart asked whether it would not be preferable to have a department of industries which would take up the development of both the village industries and the larger industries. The Hon'ble Mr. Botham replied that the point to which the Assam Government looked was what was immediately needed in the province to look after the cottage and village industries, and at present the larger industries were getting on quite as fast as the province was able to supply labour and other things. They would leave the various industries mentioned in Resolution No. VI to private enterprise.

The Hon'ble Rai Bahadur Ghanasyam Barua said that the people's view was that industries should be developed in a very thorough manner and not merely cottage industries. Asked whether there was any difference of opinion among the committee on this subject, the Hon'ble Mr. Botham replied that so far as he remembered there was not any when the resolution was passed. Rai Bahadur Kanak Lal Barua said that the impression left on the members of the last committee was that the Co-operative Societies and Industries should be quite separate and that the Superintendent of Industries would work in close touch with the Registrar, but now the proposals seemed to be that the former would be subordinate to the latter. The Hon'ble Mr. Botham said that the idea of Government was that the Superintendent of Industries should be in subordination to the Registrar.

The Hon'ble Maulvi Syed Saadulla said that the Superintendent of Industries was suitable for improving cottage industries but they wanted to go a step higher and have a higher officer, whether an expert or a business man, who would advise means for the development of the resources of Assam.

The President said that in the bigger provinces it is proposed to have a Director and a Deputy Director, the Director to look after the bigger industries and the Deputy Director to look after the cottage industries, and inquired whether if financial help were forthcoming

from the Government of India the Assam Government would accept such a proposal. The Hon'ble Mr. Botham replied the proposal contained in the resolution in question was intended to meet an immediate necessity, and that they would welcome the proposal of the bigger provinces.

Asked by Mr. Low whether that officer would be an expert or an administrative officer, the Hon'ble Rai Bahadur Ghanasyam Barua suggested that he should be an expert in one or two industries, and on questions relating to industries on which he was not an expert he would ask for expert advice from the Imperial Government.

The Hon'ble Mr. Botham stated that the idea of the Local Government was that the Superintendent of Industries would be under the Registrar of the Co-operative Societies. So far as his work was naturally on co-operative lines he would actually be directly under him, but so far as it was apart from co-operation his subordination to the Registrar of Co-operative Societies would be purely formal. The Superintendent of Industries would be an officer of the Provincial Service and he would get a local allowance as such. His pay would range between Rs. 800 to Rs. 1,000. If they had a higher officer as Director of Industries he would have to be paid from Rs. 1,500 to Rs. 2,000.

Resolution VIII.—That the establishment of an Imperial Department would be most desirable. For Assam expert advice would be required in connection with sericulture, dyes and dyeing, glass making, and paper making, amongst other industries.

(*Resolution VIII.*—Was not separately *discussed.*)

Resolution IX.—That the organization of a Provincial Advisory Committee to include non-official members is desirable.

Sir Francis Stewart wanted to know how the Provincial Advisory Committee would be organised, and whether it would be by Government nomination. The Hon'ble Mr. Botham thought that Government nomination was probably the only way at present. Questioned as to how many members there would be on the committee the Hon'ble Rai Bahadur Ghanasyam Barua said that the details had not been discussed. In answer to Mr. Chatterton, the Hon'ble Mr. Botham said that the members of the committee would not be paid, but they would be given travelling and halting allowances.

Sir Francis Stewart enquired about the location of the offices of the Director or Superintendent of Industries and the Provincial Advisory Committee and whether they would be at Shillong. Colonel Gurdon said that Shillong was not only a hill station but the head-quarters of the Government. The Committee might meet at convenient stations. The Hon'ble Maulvi Syed Saadulla was of opinion that Gauhati would be a central place.

Resolution X.—That the relations between the Provincial and Imperial Departments should be modelled on the existing relations between the Provincial Agricultural Department and the Imperial Agricultural officers at Pusa. Advice should be available freely, but there should be no direct executive or administrative control.

Was not separately discussed.

Resolution XI.—That the formation of sale agencies in different parts of India and elsewhere is desirable for the display and sale of Assam silk goods.

Asked by Mr. Low whether they had availed themselves of existing institutions like the Swadeshi Stores in Bombay or the Home Industries Committee in Calcutta, Colonel Gurdon replied that there was no one in Assam to do the business and that they were awaiting the Superintendent of Industries. The Hon'ble Mr. Botham said that they had got into touch with the Home Industries Committee in Calcutta and that they had promised to assist them. The President said that the Bombay Swadeshi Stores were a private limited company whereas the Calcutta Home Industries Depôt was not a profit making company, and therefore they should be in touch with the Calcutta Depôt rather than with the Bombay Swadeshi Stores. The Calcutta Depôt always desired to get into touch with the manufacturers and improve the articles when they did not find them up to quality, by sending a man to show how to do the thing. Rai Bahadur Kanak Lal Barua thought that the co-operative societies should help in the matter by collecting the articles and sending them over to the depôts. Mr. Low remarked that the Bombay Stores were working through the ordinary middlemen and trying to get at the individuals themselves if they could but they never gave any advances.

Resolution XII.—That a system of Government certificates regarding the quality of products would be feasible and useful in the case of silk, and possibly of other products of unorganized industries.

The Hon'ble Maulvi Syed Saadulla wanted to know who would issue the certificates and pass the quality of the goods. The President remarked that it would not be done by the Department of Industries. Mr. Low said that it was done in quite a number of places by the trades themselves. In the case of piece goods there was at Nagpur a market committee with which the Government had nothing to do, and that committee passed the cloth which then found a market but without its seal they would get no buyers. The Hon'ble Maulvi Syed Saadulla was of opinion that the matter should be left to the trade itself, and if the article was not up to the standard quality it would not have any market.

Resolution XIII.—That the Local Government should be given a very free hand to assist industries in any of the ways mentioned in paragraph 17 of the preliminary note, or in other ways. It is impossible to lay down hard and fast lines on which alone assistance should be given, and each case must be considered on its own merits.

In reply to Sir Francis Stewart how Government help would be given, the Hon'ble Mr. Botham stated that it would be given on the recommendation of the industrial officer but no doubt the advice of the Advisory Committee would be taken. That would mean that they should have a fairly senior and responsible officer as Industrial officer.

In reply to Mr. Low, the Hon'ble Mr. Botham stated that they had done nothing to help small industries on the *takkavi* lines, because nobody asked for it. As regards *takkavi* loans they were restricted to agriculture. Rai Bahadur Kanak Lal Barua said that money loans were given by co-operative societies to small industries. Mr. Chatterton asked whether loans were given to individual weavers or to co-operative societies. The Hon'ble Mr. Botham replied that he did not think that Government loans would be required for co-operative societies who would get them in the ordinary loan market. Mr. Mackenzie said that Government had stopped giving loans to co-operative societies.

Mr. Low asked if there was anything to stop Government giving loans for the improvement of weaving outside the Agriculturalists' Loans Act, if the amount had been budgetted for. The Hon'ble Mr. Botham said that the Comptroller might object, and that allotting a sum in the budget for the purpose would not affect him. The Comptroller would say that it was unauthorised expenditure. There were certain rules in the Account Code governing the issue of advances of Government money. The Comptroller might object to any advance given except under the Agricultural Loans Act. There was the question of recovery of the advance made. Under the Agricultural Loans Act there was a regular procedure for recovery of the advances made.

Colonel Gurdon said that loans to weaving societies had to be given and if Government had not got the power it was necessary that it should take power for the purpose. The Hon'ble Mr. Botham said that any loan to private persons was outside the purview of Government unless it was authorised by some special Act. He promised to find out the exact position by consulting the Comptroller and let the Commission know about it.

Resolution XIV.—That in all cases in which financial assistance is given by Government without adequate security some control should be imposed, but the form and Government degree of control should be left to be decided by the Local Government in view of the circumstances of each case.

The Hon'ble Maulvi Syed Saadulla said that when Government renders financial assistance there should be Government control as regards audit as well as the directorate by having one or two Government officials as directors.

Resolution XV.—That the Committee endorsed the views expressed at the Gauhati Conference that the apprentice syetem offered the most promising means of training artizans, but that experiments in this direction should not necessarily exclude the trial of Industrial Schools.

The Hon'ble Mr. Botham said that nothing had been done since the passing of the resolution for the establishment of industrial schools.

Mr. Low desired to know what the Committee thought of having the system of apprenticeship made compulsory, by a law to the effect that if an apprentice entered into an indenture with his employer it would be binding on him and employment of the apprentice by any other employer would be penalised. Rai Sahib Monomohan Lahiri said that there is an Act already in force which is an India Council Act and that the apprentices in the Hazaribagh Reformatory School were under that Act. Mr. Low remarked that there was an Act of the fifties which was a dead letter. Rai Sahib Monomohan Lahiri replied that it was not a dead letter but that it was applicable to reformatory apprentices only. The apprentices could not run away, and if anybody else employed them he was liable under the Act.

In reply to Mr. Chatterton, Rai Sahib Monomohan Lahiri stated that the boys of the school were not apprentices while under police supervision, but after the imprisonment expired they became apprentices under the Apprentices Act. The Hon'ble Mr. Cunningham stated that they were then placed under the supervision of the Education Department. Rai Sahib Monomohan Lahiri promised to send a copy of the indenture and other papers, if any, bearing on the point.

In reply to Sir Francis Stewart it was said that the establishment of industrial schools was waiting for the industrial officer and for money. If they were started, the Hon'ble Mr. Cunningham personally would not care whom they went under so long as they did not come under him, because anything that he had seen in the way of an industrial school had been entirely futile. Asked by Mr. Low if he had any views on the question of principle whether they should be under the Director of Industries or of Public Instruction, he thought it was almost immaterial at the present stage though it might develop into a matter of importance later.

Hydro-Electric Power.—In reply to Sir Francis Stewart, Mr. Bull said that so far as enquiries went the only sources of power were so far away from any place where power could be utilised that it was not considered worth while going into the matter in great detail. The power was available on natural falls of rivers in the foothills. There was a scheme to light Shillong. It could not be done on a commercial scale because the rate per unit would be exorbitantly high and there was no business factory near, and it was not worth while starting the thing in the hope that business might develop. In Shillong the price of coal for private consumers was fourteen annas now while in the plains Rai Sahib Monomohan Lahiri said it was ten annas six pies per maund, and the actual quantity of coal would be only

thirty seers in a maund after making allowances for shortage, sand and stone. Coal was very dear in Assam.

Asked by Mr. Low whether the dearness of coal was due to the special conditions under which the coal mine was worked or due to labour or transport difficulties, Mr. Bull stated that it was due to the monopoly of the people who owned the carts to bring the coal out. The mine depended on carts for transport and there was no railway to the mine. He had no information whether the Margherita Coal Company was in difficulties in obtaining labour. Colonel Gurdon said that he was told that there was a great amount of coal but that the company could not get enough labour for extracting it. Rai Sahib Monomohan Lahiri stated that last year the price was Re. 0-9-6 per maund while this year it is Re. 0-10-6. It was a question of monopoly. The steamer companies who were the agents of the Coal Company would not carry coal for less than five annas a maund from Calcutta and there could not be any competition, from outside. Colonel Gurdon said that the Assam Railways and Trading Company was paying a dividend of five per cent after allowing for eight per cent preference. Mr. E. P. Gilman said that the company did not pay high dividends.

Resolution XVI.—That there is a promising field for the use of co-operative principles in connection with the weaving, brass-work, and gold and silver work industries in Assam.

In reply to Sir Francis Stewart, the Hon'ble Mr. Botham said that a few co-operative societies had been started in connection with weavers. Asked by Mr. Low, Rai Bahadur Kanak Lal Barua said that they had no co-operative societies in connection with brass work. With regard to gold and silver, Mr. Mackenzie did not think that sufficient workers in gold and silver could be found to form one co-operative society. Asked by Mr. Low whether co-operative credit for gold and silver workers would not be risky, the Hon'ble Mr. Botham said that it would be only on a very small scale and the articles would only be made to order.

General.—As regards transport, the Hon'ble Maulvi Syed Saadulla brought to the notice of the Commission that the monopoly given to the Gauhati-Shillong Motor Transport Company was very hard upon the people. The Company was raising the rates every now and then. He wanted to know why a monopoly as regards passenger traffic and an *interim* monopoly on goods traffic had been given to Gauhati-Shillong Motor Transport Company.

Mr. Bull stated at the outset that the two questions were separate. The Gauhati-Shillong Motor Transport Company was started to enable people and goods to get to Shillong quicker than they did in the past when they had been dependent on tongas. Motor transport was started before the war. Since the war, as everybody knew, it had been very difficult to get materials for repairs, tyres and other things. There was no monopoly. The Local Government were not in a position to give a monopoly. The road was narrow and winding. It was not possible to allow more than a certain number of motor vehicles on it with safety, and they had very elaborate regulations to enable the traffic to move. The Motor Company had promised to run so many passenger vehicles and so many goods vehicles and in addition to that permission had been given for ten heavy vehicles belonging to private owners to carry goods. No proof had been put forward by any of the petitioners up till now that traffic was impeded or held up, that is to say, that traffic was presented to be carried but refused; nor was there any proof that passengers applied for seats but did not get them. General statements were made but no proof had been given. The statement had not been challenged that the service that used to run daily, now only ran twice a week because the average of passengers who travelled in the Company's service for a certain period was one per day. Under those circumstances, on the advice of the Motor Standing Committee the service was reduced to two days a week.

The Hon'ble Maulvi Syed Saadulla replied that his question was why the Gauhati-Shillong Motor Transport Co. alone was allowed to carry passenger traffic and the other private companies who used to carry passengers before had not been allowed to do so during the last six months.

Mr. Bull stated that there were ten lorries apart from the motors run by the Motor Transport Company which travelled on the road. They were not allowed to carry passengers because the Government had not the same control over them as over the Motor Transport Co., and there was nothing to show that the facilities afforded by the Motor Transport Co. for passenger service were not sufficient. The Motor Transport Co. had paid on an average 4½ per cent and last year it paid no dividend at all. It might be very simple for outsiders to open another company and cut freight, but they could not possibly make any money. There was a company already existing and no proof had been put forward that they did not meet the necessities of the public as regards passenger traffic. In reply to the President, Mr. Bull said that there was no non-official on the Motor Standing Committee. It was open to the public to make complaints either to himself or to the Executive Engineer in Shillong if they could not get seats. They had vague applications from various people that they could not get accommodation, but there was only one instance quoted of a man having failed to get a seat. On that day there were 3½ seats vacant and it was not understood why he did not get a seat. He lives at Gauhati and it was not possible to correspond with him. He did not make the statement himself but others made it for him and he did not even sign the application. No definite complaints had been made by people of not having been able to get seats. In those circumstances the Motor Standing Committee with the advice of the Chief

Commissioner considered that no fueher facilities were necessary for passenger service in the interests of safety.

The Hon'ble Maulvi Syed Saadulla made a suggestion as regards as the working of forest laws. He said that for the development of indigenous industries there should be some sort of concession given to indigenous people. In the interests of the Assamese, Government in their auctions should give some concession. They might put an upset price and if an Assamese gave it he should be given preference over the people from outside. The President replied that he was told by the Chief Commissioner that the Assamese would get preference. Colonel Gurdon stated that other things being equal they always tried to help the Assamese as far as possible. The Hon'ble Maulvi Syed Saadulla said that the people had not seen it in action in many cases.

Rai Sahib Monomohan Lahiri complained that royalty on timber was very heavy. It was six rupees a tree before but now it was five annas per cubic foot. The price of first class timber was now Rs. 1-5-0 per cubic foot. The sawing charges were between nine and twelve annas and the cost of transport was four annas and the margin left to the dealer was very small.

Mr. James Blair.

CALCUTTA.

Witness No. 411.

Mr. James Blair, *Managing Director, Surma Valley Saw Mills, Ltd.*

Written Evidence.

Financial aid.

I have had experience of the raising of capital for industrial enterprises. Provided any scheme has commercial possibilities, and the persons behind it are men of stability and experience, it can hardly be said there is much difficulty about raising the necessary capital. The bulk of the capital for industrial enterprises is provided mainly from European sources. Indian capital is not so readily obtainable, mahajans, land-owners, and bankers having a more remunerative use for their capital. Another matter which militates very much against the raising of Indian capital, has been the past large numbers of failures of Swadeshi industrial companies and banks. This, in my opinion, has done more to retard industrial progress than anything else, and it will take years to obliterate the memory of these failures. To increase the supply of capital for industrial enterprise, would seem to lie in the gradual development of co-operative banks, and by the establishment of agencies and sub-agencies by the existing Joint Stock Banks and Agency houses.

I have had no experience of Government financial assistance, but I am opposed to the idea. Such assistance has the tendency to lead to unsound undertakings by relying on the fact of Government support, and the artificial prosperity thereby created collapses on the withdrawal of such support.

Pioneer factories.

If Government at any time start pioneer factories, the result should be made public and the factory offered for sale, as soon as there is reason to believe it has reached a profit-earning stage. I would strongly urge, however, that where no political reasons enter into their calculations, Government should not, under any circumstances, convert any such factories into permanent Government enterprises, except, of course, in case of industries of national importance,—munition factories, for instance. Pioneer factories should only be undertaken by Government when private or public interest cannot be obtained. Regarding the limits of Government assistance, I am entirely opposed to Government competing with private enterprise in any shape or form. Besides being very unfair, it can only have the effect of retarding private enterprise.

Research.

In my opinion, provision for research is an essential preliminary for any forward industrial policy. As an example, I should like to point out the benefit the timber and other sundry industries have derived from the Dehra Dun Forest Research Institute. I favour, however, an Imperial Research Institute as being more likely to be adequately staffed and equipped, prevent unnecessary overlapping, and more efficient, than a small number of independent Research Institutes spread all over the country. Only in special cases private firms might be allowed the services of experts, and if such services were paid for, the result of their researches should be considered private. The Research Institute should be put in a position to give sound and practical advice to private enterprise. Directors of Industry I favour being appointed to every Province. They should collect and publish commercial statistics, answer enquiries, enquire into the possibilities of starting of new industries, help by giving all the latest results obtained from the Imperial Research Institute, and by co-ordinating and supporting the wishes and requirements of industry and keep the Imperial Commerce and Industry Department regularly posted.

Industrial surveys.

As regards surveys for industrial purposes. A complete survey of all the forest resources would be of the greatest possible value. There is a fair idea as to the quantities of the principal species of timber, but little is known of the other species, or of the minor products.

So far as my experience goes, model factories are of little use, and the results obtained from them are often very misleading and unreliable.

Two essential things for progressive industrialism, are cheap raw material and good communications. Without good communications, the necessary raw material cannot be cheap, or possibly not available at all, so that it therefore becomes imperative to look far ahead with regard to communications and transport facilities, in order to encourage the development of industries. Roads, railways and waterways.

The Provinces of Eastern Bengal and Assam possess a magnificent network of waterways, and by putting these waterways under proper control and giving them proper attention, it would undoubtedly help very materially and economically as a transport for industries. In Eastern Bengal and Assam the rivers are used to a very large extent in the development of the country, in moving agricultural produce, minerals, and forest produce, and the present condition of the waterways seriously hinders development. The want of proper facilities for transhipment of the heavier material during the cold season is another obstacle. Transhipping heavy packages by coolies, besides entailing unnecessary delay, is expensive and makes competition difficult against other countries properly equipped. Waterways in a province like Assam are bound to play a very important part in the development of the country, so the development of the waterways would be a practical and a real assistance to industry.

On the Railways, encouragement might be given in the way of specially low freights on raw material for manufacture, and outward on the manufactured stuff. Whatever may be the position of freights at places near Calcutta, the freights upcountry, where small industries are concerned, are capable of revision. What seems to me desirable is that the Railway Board should have greater powers in settling rates and enforcing uniformity of practice. On a complaint to the Board they should have powers to remedy any obvious defects or remove anomalies. Large industries with powerful associations can look after themselves, but the tendency with small individual industries upcountry is to treat them sometimes as if they were of no consequence. The Railways upcountry do not in my opinion encourage industry as they should.

Roads and bridges in Assam are capable of considerable improvement. I would strongly urge Government to adopt a liberal policy towards the matter of roads and bridges, for without them no real progress can ever be made. Most of the roads and bridges in this Province are *kutcha*, and it is no uncommon thing for a road to be closed for weeks, sometimes months, on account of the bamboo bridges collapsing during the rains. In fact, there is a case in the Surma Valley district where the main trunk road between Sylhet and Cachar districts has been closed to wheeled traffic for several years. A small part of the road slipped into the river, and although a short diversion of the road, which presented no difficulties, could have put the matter right, the road has remained closed, on the grounds that there were no available funds.

There are many places where Railway bridges might be utilised to advantage for light traffic. It will be many years before some of the rivers are bridged, but where a Railway bridge is near, I can see no reason why it should not be utilised to improve communications.

To my mind—so far as this Province is concerned—what industrial development requires is not so much financial aid as that Government develop the country by giving good communications and create the other conditions necessary for the successful prosecution of industries, then private enterprise will be found to do the rest.

The forests are capable of almost indefinite expansion, but before this huge indigenous industry can be pushed along to compete with foreign timbers,—imported from countries many thousands of miles away,—important and sweeping changes in forest administration are necessary. There is obviously something wrong when a country like India with its 250,000 square miles of State forests, has to depend to a very great extent on foreign countries for its enormous annual timber, sleeper, and tea chests requirements. The proper working of the forests would assist materially and economically towards industrial development but more elasticity is essential than is obtainable under the present system. Whatever the forest rules may have been in the past, they are now unsuitable for the present conditions, and are the cause of most of the trouble experienced. Forests.

The forests are provincial, that is, their income is taken and their expenditure controlled by the Provincial Government. To begin with, a province has no control over capital funds, so that for forest development, the Forest Department has to rely on whatever share they can obtain from the free balance, estimated each year by the Financial Secretary. As the allocation of the free balance is being influenced more and more every year by the Legislative Councils, and there being no popular demand for forest development, progress under such conditions is difficult, especially in a province like Assam, where the whole of its income may be required for current needs.

Further, the Conservator of Forests, is not able to press the claims of the Forest Department in person in the Legislative Council—same as heads of other large Departments—so that it is utterly absurd to suppose that under such circumstances, that funds will ever be forthcoming for real forest development. Under any such policy, there seems to be little use for the highly trained and skilled Forest Staff, with no development, and very little exploitation work has resulted in a highly trained staff being retained for little more or less than royalty collecting.

For some reasons, the Forest administration in the past have not encouraged the giving of long leases or concessions, resulting in the forests being exploited by large numbers of small petty contractors, most of them working with capital borrowed at very high rates of interest. Absurdly high rates of Government royalty are charged, with the result that all the accessible timber along the banks of the river has been extracted and the more inaccessible timber left. With such large numbers of small traders working all over the forests, practically very little or no control is possible by the Forest Department, and the same blocks are worked year out and year in, giving no period of rest for forest regeneration.

The custom for a trader is to obtain a forest pass, and then go and fell timber where he pleases, and then, as often happens, not extract the logs he has felled, but leave them in the forests to rot. Mostly all the forest streams are choked full of snags of all kinds, and in their present state make the extraction of timber impossible. This state of affairs has happened because it's no one's duty to see that the rivers are kept clean. The Forest Department get little or no funds to enable them to do the work, and on the other hand the small trader, having paid a very high rate of royalty for his logs, could not be expected to do the work. Until quite recently no timber firm or saw mills held any concession or leases from Government, all the timber for the saw mills being obtained through traders. Advances were usually given by the mills and rates for the supply of logs fixed, but if the bazar rate when the logs arrived happened to be higher than the rate made with that of the mills, the logs were often sold elsewhere, and advances handed back, and, as very frequently happened, the advances were not even returned.

In the past there were many saw mills in the Surma Valley, all of which had to obtain their supplies of logs through small traders, and with the exception of two mills all the mills had to be closed down. All these failures were due to excessive royalties, payable to Government on the timber extracted, and secondly, on account of their inability to keep the contracts, through no cause of their own. It is no uncommon thing for a mill to be closed for several months every year, through the holding up of logs, and through other causes which might easily be removed.

Government in the past may have been justified in charging high royalties, but if Indian firms are ever to compete against foreign supplies, Government must realize the economic force behind the question of royalties, and should at least put royalties on a footing which would enable Indian firms to compete on equal terms with imported timbers.

The forests of this valley are mostly all evergreen forests, and the royalties charged by Government on this class of forests is simply iniquitous. Royalties are payable on the timber extracted at rates varying from 14¼% to over 57% of the actual cost price of the logs, and in no other country, class for class, are such absurd royalties levied. The same remarks apply to minor productions.

The destruction of forests is another matter. The amount of forests with good timber which are destroyed annually for *jhumming* is enormous, and for many reasons a very serious problem. There may be some difficulty about stopping this awful devastation of hill forests that goes on every year, but it can at least be brought under control and confined to areas where there is now no good standing timber. The same remarks apply to forests being deforested for the planting of tea. The custom in such cases is sinful waste, for the timber is felled and burned. No attempt is made to extract the timber, for which there is a ready market, and no royalty is paid for it. Wasteful destruction of this kind is unnecessary, and there is no reason why the party should not pay for its value, same as any person extracting the timber for sale would require to do. The rules, as they now stand, have the effect of putting a premium on the destruction of the timber. The loss of the forests is bad enough, but the loss of the timber through deliberate destruction is outside all bounds of reason.

The Forest Department staff is hopelessly inadequate, and the subordinate service badly paid and dishonest.

The difficulties of controlling and supervising forest work and very numerous small traders spread over large areas are very great indeed, and it is much to the credit of the Department that they have been able to do so much. Most of the staff, however, is employed in collecting royalties, so I should suggest for a start that this duty be handed over to the civil authorities, to allow of the Forest staff looking after the real work for which it is trained and for which it is very badly wanted.

My experience has been, that the development and exploitation of the forests cost very heavy outlays of capital, and are only possible by large organisations. Large amounts of capital will have to be sunk into the forests, and to induce this capital, I should suggest that Government grant long leases to approved firms; for unless leases are given for long periods, there can be little hope of any advance being made, over the primitive methods of exploitation. A reduction on the present scale of royalties, I consider imperative. The royalty should be reasonable, and should be such as to enable Indian firms to compete with foreign timber imported into India. Royalties placed on a business footing would mean the extraction of more timber and of all the timber now left to rot, and the exploitation of the forests being placed on a firm and sound basis.

The indiscriminate felling of timber all over the forests at any and every time should be stopped at once, if the forests are to be preserved from destruction. Schemes should be

drawn up for every forest, whereby each forest would be marked off into blocks, and so many of these blocks opened and worked under a system of rotational fellings, and thereby allow of the worked blocks having a period of rest for regeneration. The marking of trees before felling should also be instituted all over, and no tree should be felled until it was marked and recorded by the Forest Department. This will require a fairly large forest staff, but as already indicated, a fairly large forest staff would become available, if they were relieved of royalty collecting at centres no way near their forests.

The forest rules should be brought up to date. They should be made very elastic, so as to allow of each Province making rules to suit its own special conditions. This seems to me to be essential, for the Indian forests are so extensive and so varied that in no two provinces are conditions the same.

Under the present financial system, it is evident Conservators of Forests cannot safely enter on an extensive or even a steady policy of forest development. The remedy for this appears to be to put productive forest development on the same footing as productive irrigation works. The Imperial Government could easily raise the necessary capital as part of its annual loan and the provinces could be charged interest on the capital provided for their requirements.

In conclusion I should like to say that the Government's technical officers seldom fail to render every assistance and help within their powers that their rules allow.

The land laws are not all that could be desired, especially those relating to leases, and are a great hindrance to industrial development. Something should be done by Government to ensure that leases issued by Government in respect of minerals and land should be clear and that the lessee should be saved the expense of litigation in defending his leasehold. Government should also put themselves in a position for the acquisition of land for industrial purposes. Land policy.

ORAL EVIDENCE, 14TH JANUARY 1918.

Sir F. H. Stewart.—*Q.* You say in your statement that Government should not, under any circumstances, convert pioneer factories into permanent Government enterprises, where no political reasons enter into their calculations. By 'political reasons' you mean if the industry is one of national importance you would not have any objection?—*A.* That is right.

Q. Then you say that you derived much help from the Dehra Dun Forest Research Institute, and arguing from that you would like to see a general Imperial one?—*A.* Yes.

Q. If you had an Imperial one, would it not be too large or too unwieldy?—*A.* No, I think it would be better.

Q. The suggestion has been made sometimes that there should be 3 or 4 in different parts of the country, each dealing with its own particular local subjects; one at Dehra Dun, dealing with forest problems, one elsewhere with chemistry, another elsewhere again with metallurgy, etc. Don't you think that would be preferable?—*A.* No, there would be a tendency to overlap in cases of that sort. You would probably find two of them dealing with the same subject. An Imperial Institute would also likely be better equipped.

Q. Could you not provide against that by central control?—*A.* If you had central control, yes.

Q. In that case you think it would be better to have more than one?—*A.* Yes, assuming there was central control and they were properly equipped.

Q. You discriminate between the services of experts and advice, and think that these Government experts should be there to give advice to anyone asking for it?—*A.* Yes.

Q. But their services you would not grant the use of except in exceptional circumstances?—*A.* Yes.

Q. Then they would be paid and you think the result of their work should be kept private?—*A.* Yes, if paid.

Q. Do you think that would be right, considering that they are Government servants?—*A.* The firm is paying for their services and is entitled to the results of their researches.

Q. The firms no doubt are entitled to protection, but would that not be met by saying that the results of their work should be kept private until a fairly definite period had elapsed?—*A.* If their services are paid for, the results should be kept private.

Q. Then you refer to waterways; have you any specific suggestion as to what could be done to make better use of them?—*A.* The rivers might be put under the control of somebody, a Waterway Trust or something of that sort.

Q. Comprising both officials and non-officials?—*A.* Yes; similar to the Calcutta Port Trust.

Q. Is anything at all done for them in Assam?—*A.* Very little by the Government; all by the steamer companies.

Q. Whom do they come under—the Public Works Department?—*A.* The rivers? I think some do, but am not sure about that. I know they keep the records of water erosions and water levels, etc.

Q. Supposing you had a Trust of that sort, where would you locate it?—*A.* It is difficult to say. I should say for the central controlling body the most convenient spot might be Calcutta.

Q. You mean that there may be one Trust to deal with all the waterways, not a separate one for Assam and another for Bengal?—*A.* No that would be too big a proposition at the present time. I favour a Trust for each province with a central control, say, in Calcutta.

Q. Then you speak about railway rates: you think the Railway Board should have greater powers in settling rates and enforcing uniformity of practice. What do you think of the suggestion made to us that there should be a Committee which would meet perhaps twice a year, including commercial men, who would go into the question of these rates, and have power to settle them?—*A.* I think the suggestion very good.

Q. Railway rates are very intricate; do you think even a good business man would be sufficiently acquainted with them in detail to be of sufficient use?—*A.* I should think, so far as local rates are concerned, he would.

Q. You give a case in the Surma Valley district where the main trunk road between Sylhet and Cachar districts has been closed to wheeled traffic for several years. Has it been put right now?—*A.* No, it has not; it has been like that for several years.

Q. Have you not had the Chief Commissioner going round?—*A.* No.

Q. Is this road looked after by the Public Works Department?—*A.* Yes, it is a trunk road.

Q. I suppose representations have been made about it?—*A.* Yes, for a long time.

Sir D. J. Tata.—*Q.* You mean to say the road has been closed for several years?—*A.* Yes.

Sir F. H. Stewart.—*Q.* You are Manager of these saw mills?—*A.* Yes.

Q. Do you have any particular trouble in your capacity as Manager with the Forest Department?—*A.* I am afraid a great deal.

Q. Is it, so to speak, their fault, in your opinion, or because of the rules and regulations?—*A.* Principally the rules and regulations.

Q. It is not a personal matter; you find them willing to help as far as they can?—*A.* Not the subordinate staff.

Q. You refer to the subordinate service being badly paid and dishonest?—*A.* Yes; the Divisional Forest Officer usually gives as much assistance as he can in his power.

Q. You say the collection of royalties should be handed over to the civil authorities. Would that be a practical proposition? The Forest Department would have to supply all the rates?—*A.* Yes, but leave the collection of royalties to the civil authorities. That would set the forest officer free to do his own work.

Q. Do you find the Forest Department efficient in dealing with commercial matters?—*A.* No, I am afraid they look upon it too much from the revenue point of view.

Q. Do you think it would be a good thing if a special forest officer was given a certain amount of business training and put in to deal with such matters?—*A.* I think it might be a good thing.

Mr. C. E. Low.—*Q.* Would he let the public have the wood any cheaper if he had a business training?—*A.* No, but he might be able to come to arrangements better with business firms. They don't grasp the business side of a proposition as a rule, but only look at it from the revenue point of view.

Sir F. H. Stewart.—*Q.* Another point put before us is the great need for the services of Forest Engineers. Do you agree with that?—*A.* The difficulties, of course, are enormous. I certainly think that any man with engineering skill would certainly be an advantage.

Q. The difficulty would be rather whether these men should be members of the Forest Service, or whether they should be recruited separately?—*A.* It is difficult to say. I should think you could probably get men outside and better men.

Q. Would you get good men for any pay and prospects you could be likely to offer?—*A.* I think you could.

Q. I don't understand what you mean by 'the actual cost price of the logs' in the sentence reading, "Royalties are payable on the timber extracted at rates varying from 14¼ per cent. to over 57 per cent. of the actual cost price of the logs."—*A.* That is the cost, extracted and landed at the mills but without royalty.

Q. The royalty is really the actual cost price?—*A.* No. We simply pay royalty to Government which I consider is excessive. I think it will ultimately run up to possibly over 90 per cent. when better forest appliances are installed. The cost price is the cost of felling, extracting and floating to mills.

Sir D. J. Tata.—*Q.* The total cost of the logs is royalty *plus* freight, felling and extraction charges?—*A.* Yes. Supposing the cost was 4 annas per cub. ft. at the mill, and Government charged 4 annas per cub. ft. royalty, that would be 100 per cent. over the actual cost of the logs extracted and delivered at the mills.

Q. With regard to forest administration, do you propose that Government should manage everything, and sell timber to the saw mills, rather than give up the forests to ordinary traders and leave them to deal with the mills?—*A.* The forests are so big that I don't think Government is likely to give them entirely over. Let the Department work the forests if they wish in their own way, but give concessions on long leases to approved firms; but not to small traders, because they simply destroy the forests.

Q. What is to prevent firms getting these passes?—*A.* Nothing. They would not be much under Forest Department control. They would be allowed to fell trees in any place inside a given area. In this case a big firm might find numerous small contractors in the same area and even in the same streams. The small contractors' method of working makes the position impossible for any respectable firm.

Q. I don't understand why Government will not deal with firms, and will only deal with individual traders?—*A.* I cannot tell you. There certainly have been objections to it for some time. They are considering a concession to my firm now.

Q. So that you can deal with the area yourself, Government marking the trees and you felling and extracting the timber yourself?—*A.* Yes. At the present time there is no restriction at all. A man takes out a pass and goes to any forest he likes, and fells any timber he likes. The timber is not marked. He pays the royalty, and anything he does not want can lie there. There is no compulsion to extract it.

Mr. A. Chatterton.—*Q.* You say that, so far as your experience goes, "model factories are of little use, and the results obtained from them are often very misleading and unreliable." What are you alluding to there?—*A.* Several I have had in my own experience.

Q. Can you give us some details about this?—*A.* One was an oil mill, another was a sisal hemp factory.

Q. These were run by Government or by private enterprise?—*A.* Private enterprise.

Q. As demonstrations?—*A.* Yes, but the results obtained from them were entirely different from what we were able to get on a commercial footing; the results obtained were very misleading.

Q. How did that happen?—*A.* One was an hydraulic oil plant and the small machinery gave a much higher efficiency than what we could get on bigger machinery, a difference of 5 per cent. in results in the percentage of oil extracted.

Q. How do you account for that?—*A.* Simply on account of the smaller cake and the greater cake pressure with the smaller machinery. The bigger machine with bigger cakes did not get the same efficiency.

Q. What seed was crushed in these oil mills in the Surma Valley?—*A.* Mustard, linseed, *til*; practically all kinds of small seeds.

Q. Was the industry started so that you might get oil cake for the tea plantations?—*A.* We want the oil. Oil is the principal thing; oil cake is a by-product.

Q. Is the oil used locally or exported to Calcutta?—*A.* Used locally.

Q. In regard to the sisal hemp?—*A.* It was disastrous.

Q. I think we have heard of that before?—*A.* It was in a bad position when I took it over.

Q. And so far as you know it is still being cultivated?—*A.* No, it has been given up entirely.

Q. We have not had the opportunity of visiting any of these saw mills in Assam. Could you tell us exactly what kind of equipment you have got in your mill?—*A.* The whole place is now being re-organised. Machinery has been delayed on account of the war. At the present time we use nothing but circular saws. The American style of cutting is as efficient a system as you can get for our class of work.

Q. Are these comparatively new mills?—*A.* No, old mills, and the machinery is fairly old, but quite efficient.

Q. You don't use band saws at all?—*A.* No.

Q. They are not used in Assam at all?—*A.* They are in one place.

Q. Are they as satisfactory as circular saws?—*A.* So far as box making is concerned, the band saw is quite efficient or where you are cutting planks; but our business so far as hard wood is concerned is to a great extent in sawn squares, and our machinery is more efficient for that work.

Q. You mean you are just facing up logs?—*A.* We simply square them as they do in Burma, and they are shipped to Calcutta and other places. In Assam in one mill they use band saws, they are only cutting tea chests. They failed to cut hard timbers, and in England they had difficulty over them.

Q. Do you only deal with hard woods?—*A.* No, we are making tea chests too, we are also putting down machinery to make 3-ply veneer chests. We are doing away with the manufacture of local wooden tea chests.

Q. With this Venesta system of working you get much more economical utilization of your timber?—*A.* Yes.

Q. Would you be able to use younger timber for tea boxes?—*A.* I don't think so.

Q. What girth of wood would you be able to put into Venesta lathes?—*A.* We work with a minimum girth of 6 ft. trees. The upper parts of the trees would be less than 6 feet.

Q. Cannot you deal with anything smaller than that?—*A.* You can, but the timber is not good enough.

Q. In your note here you say that all the mills have had to be closed down; is that closing down due to difficulty in carrying on the business, or is it due largely to the inefficiency of the equipment of the mills, and to the difficulty of competing with foreign tea boxes?—*A.* Do you mean the closing down of the mills entirely, or the closing down annually? The saw mills in the Surma Valley have almost been wiped out.

Q. Was the closing down of these mills due to the inefficiency of the arrangements in getting timber; or to the inefficiency of the arrangements for working up the timber?—*A.* It was due to excessive royalties, and the logs being withheld. The timber was entirely in the hands of small traders, who did as they liked. They did not hesitate in closing the mills down if they thought they could get bigger rates. One big mill went down for I think about 3 lakhs of rupees. It was a very well equipped mill.

Q. Why could not the managers of saw mills get licenses to cut timber in the forests themselves?—*A.* How could they with other two or three hundred people going for timber felling where they chose to work? Every one took a permit. If you worked on that system, all the timber could get mixed up or stolen. There would be no development and would end in a rush being made for all the accessible trees near to the rivers.

Q. Was the permit given to cut timber indiscriminately from the forests?—*A.* Yes, and any man could get a pass and cut timber wherever he liked.

Mr. C. E. Low.—*Q.* A man is allowed in a certain wide area to cut at his discrimination?—*A.* Yes.

Mr. A. Chatterton.—*Q.* What you complain of is this indiscriminate felling in the area?—*A.* Yes, he simply fells trees alongside the river and pays his royalty. That is all that is done. There is no control of the small trader in the forest; absolutely none.

Q. You go on to deal with administrative questions. What do you put down as the most crying need for a reform?—*A.* I should say forest control, and working of the forests on scientific lines.

Q. In what way?—*A.* Let the Forest Department run the forests. They don't at the present time. They know very little about them.

Q. How do you mean?—*A.* I say they don't control the work of felling and extraction and look after the regeneration of the forests.

Q. Who does control it then?—*A.* They control the royalties when the stuff comes to the royalty collecting station; nothing more.

Q. You imply that they simply give leases and take no further interest in the matter?—*A.* Until the stuff comes to the royalty station, they take practically no interest.

Q. You mean there is no control over the actual felling of the timber inside the forests?—*A.* None whatever, except in the areas where we are working, which we initiated in order to save ourselves, and the forests from destruction that we hoped to obtain a concession from Government to develop and exploit.

Q. What are you doing?—*A.* In the area we have got we insist on the Forest Department marking trees to protect ourselves and protect the forest.

Hon'ble Sir R. N. Mookerjee.—*Q.* To avoid prosecution in the case of cutting trees not marked?—*A.* Yes, if any of our men are caught felling unmarked trees we are fined.

Sir F. H. Stewart.—*Q.* What you insist on is the Forest Department marking these trees, so that you are sure of getting the right timber?—*A.* Yes, so that immature timber is not felled, and so that all marketable trees are extracted which are accessible.

Mr. A. Chatterton.—*Q.* You make the Forest Department select your timber for you?—*A.* That is right. (*Witness here gave confidential evidence.*)

Q. You say you propose to sink money in the forests and develop them?—*A.* Yes, by clearing the rivers, blasting rocks, making roads and railways and by removing accumulations of the last 60 years which the Forest Department ought to have done.

Q. You are going to improve the waterways for your own transport, but how are you going to develop the forests, if you are going to cut all the timber in the forests?—*A.* There are certain trees left to regenerate the forests; everything is not cut down. Only trees of 6ft. girth and over are felled, all smaller treas are left.

Q. Your improvements will be of such a permanent character that they will really develop the forests?—*A.* Yes; our intention is that we will work a certain number of blocks and when these are finished, close down for a period of 10, 12, or 15 years to give the forest a chance of regenerating. At the present time blocks are worked year after year, and young trees are killed; there is no chance of the forests re-establishing themselves. (*Witness here gave confidential evidence.*)

Q. You complain of these royalties which other people complain of too; but all the figures which are furnished to us are always given in the form of percentages. What we would like to have are actual figures showing what the amount of royalty is, because 14¼ per cent. on the cost of extraction does not seem to be very much in the way of royalty.

Mr. C. E. Low.—*Q.* We would like the figures showing up to the exploitation point, and the figures on the converted timber?—*A.* That can be furnished to you. I can give you all the royalties now, which we are paying on the actual rough material, 3rd class logs are 1 anna per c. ft., 2nd class 3 annas, 1st class 4 annas, in the rough.

Q. What percentage of the rough timber becomes saleable timber?—*A.* You can take 2 cubic ft. timber from the rough to make 1 cubic ft. sawn scantlings. Our royalty is 8 annas on the manufactured stuff for 1st class timber.

Hon'ble Sir R. N. Mookerjee.—*Q.* What is the value of that wood there, and for how much can you sell it there?—*A.* It varies a great deal. At the present time first class timber is Rs. 2 per c. ft. but it is sold sometimes at as low as Rs. 1-8 per cubic ft.

Q. That is the average rate from Rs. 1-8 to Rs. 2 for which you have to pay 8 annas royalty?—*A.* That is first class timber. On a second class log royalty is 3 annas. First class would be 8 annas per c. ft., on the manufactured timber.

Q. And for which you can get Rs. 1-8 to Rs. 2 if you were to sell it?—*A.* Yes, but Rs. 2 per c. ft. has only been reached quite recently and since timber imports were shut off.

Q. What would be your other expenses for bringing that into a condition to sell it?—*A.* You are coming to trade secrets now.

Mr. A. Chatterton.—The cost of extraction and of bringing it into the market depends upon your own efficiency?—*A.* Yes, and efficiency depends upon control. At the present time we have very little control over the forests except working under a concession.

Q. What do you want in the forests in the way of control?—*A.* I want reduced royalty and a long lease to firms of approved standing, as short leases are useless.

Q. Then you say that the "indiscriminate felling of timber all over the forests at any and every time should be stopped at once, if the forests are to be preserved from destruction," and you suggest that "schemes should be drawn up for every forest, whereby each forest would be marked off into blocks." Are there no working plans at the present time?—*A.* No.

Q. None at all?—*A.* I don't think so. The only working plan I know, so far as the Surma Valley is concerned, is our own which at the present moment is not complete. (*Witness here gave confidential evidence.*)

Q. The last paragraph of your note about land laws. What is in the back of your mind when you write that "something should be done by Government to ensure that leases issued by Government in respect of minerals and land should be clear, and that the lessee should be saved the expense of litigation in defending his leasehold?"—*A.* At the present time I am controlling a syndicate which is boring for mineral oil. We put in an application for land on the opposite side of the river. The land was held under a redeemed lease and Government have offered me a lease, provided I would guarantee them against action by third parties, practically inviting me to have trouble because Government would not give me a clear lease which other people could not dispute. This was a redeemed lease in which Government say that the minerals do not belong to the lessee. I asked them to give me a clear lease, which they have not done up till now.

Mr. C. E. Low.—*Q.* These cases in which the Government's title to minerals is obscure, I should imagine are very rare; aren't they?—*A.* I do not know. From what I learn from some of the big oil companies, they are not rare at all.

Q. Have you not something in your mind, namely, the case where Government has no title at all?—*A.* No, it is the case of redeemed leases where Government have declared they hold the mineral rights.

Q. What are these redeemed leases exactly?—*A.* Where Government has taken back land at some time and given it out again under a modified lease or on different terms. Government has decided that under the redeemed lease the lessee had no mineral rights.

Q. These cases do not exist in any other parts of India?—*A.* I will send you the correspondence * on the matter.

Q. I suppose in these leases land is given out under the old arrangements where Government either lease or give away the fee simple?—*A.* No, there is a difference between the titles and fee simple. Fee simple land carries mineral rights. In redeemed leases it was not mentioned in the leases whether the redeemed leases carried mineral rights. But Government have declared and claim that redeemed leases do not have mineral rights. They claim mineral rights belong to Government.

Q. You don't accept it from us that these cases are very exceptional?—*A.* So far as land leases are concerned they are not exceptional; in fact it is rather the rule with Government leases.

* See Appendix B.

Q. I am speaking of titles to minerals only.—A. I think if Government is going to give a lease they ought to make it clear before handing it over.

Q. This has nothing to do with the rules under which Government gives out minerals, but has to do with Government's title in that particular place, which is another matter.—A. Why?

Q. In apportioning responsibility for this sort of thing, it is no fault of the people who have to administer mineral rules, but the fault of the people who deal with the record of the Government title in that place.—A. That is quite right.

Q. Turning to your second paragraph, you say, "I have had no experience of Government financial assistance, but I am opposed to the idea." Does that include guarantee?—A. What kind of guarantee are you referring to?

Q. A guarantee to pay dividends, for instance?—A. No, I don't think it is sound.

Q. Even in the case of railways?—A. That is quite different, that is an undertaking of national importance.

Q. Supposing you had an industry which was of national importance, and which served a great many other industries on a peace basis, what do you think of a guarantee?—A. I have already said where there were no political reasons enter into their calculations, I am opposed to Government financial aid.

Q. Take the case of sulphuric acid. India relies on outside sources for its sulphur. Sulphuric acid is required for a great many industries. Apart from the political side, it would be of great advantage to dozens of industries if we had a reliable source of cheap sulphuric acid. Would you object to a guarantee in such a case?—A. I don't think guarantee dividends are sound at all. There are specific cases where it might be a good thing, but taken generally I don't think it is a good thing.

Q. As a general principle you are opposed to it?—A. Yes.

Q. Under the head of "Research" you point out the benefit the timber and other sundry industries have derived from the Dehra Dun Forest Research Institute. Could you point to any specific instance?—A. What about?

Q. Of the benefit which the timber industry has derived from the Dehra Dun Research Institute?—A. I know of a great many instances. We have had many benefits both as regards timber and the treatment of timber. At one time we had very much trouble with certain classes of timber used in tea chests flavouring the tea. They practically solved that question, and also showed us how to treat timber so as to prevent insects destroying it. They have also given us considerable assistance in the treatment of sleepers, which has been of considerable advantage. There is also a matter of treatment of bamboos and certain grasses for paper making.

Sir F. H. Stewart.—Q. Which branch is that?—A. Mr. Pearson's, the Forest Economist.

Mr. C. E. Low.—Q. About this question of freights, in many places we have had complaints that a mill or factory up-country has been charged a higher rate for raw material than is charged for raw material to a port. Have you any views on that point?—A. I can give you a case of timber, in the case of traffic between Assam and Cachar over the hill section. At one time a fairly good business was done there in timber shipped down to Cachar from Assam. We ourselves wanted to start it. The railway put up the rates * and the whole thing absolutely stopped on account of the rates being too high.

Hon'ble Sir R. N. Mookerjee.—Q. Did you represent the case to the railway authorities?—A. Yes. Here are letters on the matter.

Q. They lost their own traffic and still they would not do anything?—A. When it is a Government subsidized show you can do anything. That is why I object to Government guarantees and subsidies. I don't see what necessity there is to worry when you have got a guaranteed dividend. There is no competition.

Q. Did you go up to the Railway Board on appeal?—A. No, I don't think there is any appeal to the Railway Board at the present time, I should like to put it up. This is not an individual thing, but it is a matter for the whole district. It is a case which is affecting many people; at the present time timber is in very great need by the Government, but they are not helping things a bit.

Mr. C. E. Low.—Q. You say you want more money spent on roads and bridges in Assam. Have you any suggestion as to where the funds should come from?—A. That is hardly a point for me to suggest. I think if I had a free hand, I could quickly get funds by raising a local tax to get good roads and communications.

Q. The tax must fall on the land only; you cannot tax the people?—A. Why should they not?

Q. What is your idea?—A. Why should not the Imperial Government raise money and lend it to the Provincial Government and charge them interest on it? Undoubtedly if you had

* See Appendix A.

good communications, industries would spring up and the province would become richer. It means employment for people and revenue to Government.

Q. You mean an undeveloped province like Assam should be dealt with by capital expenditure on improvements ?—*A.* Yes, let them raise it in the annual budget as a loan to the Provincial Government. The roads are disgraceful in Assam ; very little is done to them. For the money expended they don't get a quarter of the value they ought to get.

Hon'ble Sir R. N. Mookerjee.—*Q.* Have you ever put that question before the Provincial Government ?—*A.* If you do that you get little change. They simply tell you they have no money.

Mr. C. E. Low.—*Q.* You refer, of course, especially to the case of an undeveloped province or area ?—*A.* Yes. You don't want a thing like that for Calcutta, but Assam at the present time is not too well off. If they cannot get the money inside, it is necessary to get it outside. A province that could not raise the necessary capital might easily pay the interest on any such loans obtained from the Imperial Government.

Q. Speaking again of the bad condition of these forest streams, it is impossible for you to give an estimate, but what sort of a thing is it : is it a very expensive business ?—*A.* It is very expensive ; sometimes, it depends. If a river has been much worked there is a large accumulation of timber lying at the bottom.

Q. Heavy timber that has sunk ?—*A.* Hard timber which falls into the river in a flood ; sometimes logs. It takes weeks for logs to come out. Hard wood is floated by bamboos, and sometimes the logs sink. All these rivers are full of snags. In the following year you will find a huge sandbank forming and a few years later you find the river taking a new course.

Q. Heavy timber will float for a few hours until the air gets out of it.—*A.* Not green timber. We are trying to do away with the floating of timber with bamboos by ringing the trees before felling. None of the heavy timber at the present time floats; it sinks immediately.

Q. It is really an expensive business. What sort of length of river? These are side streams I suppose ?—*A.* Some streams are 60 or 70 miles long. My point is that no small trader can do anything to develop the forests. In an area of, say, 500 square miles there might easily be several hundred miles of streams and rivers. (*Witness here gave confidential evidence.*)

Q. Do you think it is a business proposition ?—*A.* We are taking it up, so must say we think it is.

Q. The Assam Government informed us that they had boats for drawing these snags, but as fast as they were bought they were commandered for Mesopotamia.—*A.* The boats never came to the Surma Valley. They might have had them in Assam.

Q. You say, until quite recently no timber firm or saw mills held any concession or leases from Government, all the timber for the saw mills being obtained through traders. That applies, I understand, only to the Surma Valley ; the position is different in Assam?—*A.* Yes, only one concession was given in Assam to the Naharkuti Timber Company which closed down. (*Witness here gave confidential evidence.*)

Q. The policy has been to get definite areas assigned to definite mills by the Forest Department. We were informed that the Inspector General of Forests in 1909 laid this down as a desirable policy, but that Government has tied themselves down with loosely-worded leases to certain individuals, which made this impossible in the Assam Valley. You support that policy of assigning definite areas to definite mills ?—*A.* I do. The Assam mills have areas allotted them ; there is no signed agreement with Government. They don't have further concessions there, as far as I am aware. They are simply allowed to cut box wood, nothing more.

Q. That area should be run on the ordinary working plan system pursued in every part of India. There should be some form of selection?—*A.* I think so.

APPENDIX A.

No. R.-86, dated Chittagong, the 6th March 1918.

From—The Traffic Manager, Assam Bengal Railway Company, Limited,

To—The Managing Director, Surma Valley Saw Mills, Limited, Bhanga.

With reference to your enquiries I note below for your information the rates on timber

unwrought or logs during the years 1914-15-16 and at present from Badarpurghat to the undermentioned stations.

Badarpurghat—

Mileage basis—

	Rs.	A.	P.
4-Wheeled wagon or truck per mile	0	2	6
Bogie wagon or truck per mile	0	4	6

Rates per 4-Wheeled wagon or truck.

Actual mileage.	Stations.	In 1914 and 1915 rates at Re. 0-2-6 per wagon per mile.	In 1916 rates increased due to the introduction of terminal charge.	Present rates with double hill mileage.	
		Rs.	Rs.	Rs.	Mileage.
160	Manipore road	25	28	45	275
189	Barpathar	30	32	50	304
198	Jamguri	31	32	51	313
201	Oating	31	34	52	316
204	Furkating	32	34	52	319
	Rates per Bogie Wagon or Truck at Re. 0-4-6 per mile.				
160	Manipore road	45	50	82	275
189	Barpathar	53	58	91	304
198	Jamguri	56	61	93	313
201	Oating	57	62	94	316
204	Furkating	57	62	95	319

APPENDIX B.

No. 3708-R., dated Silchar, the 12th March 1918.

From—W. L. Scott, Esq., I.C.S., Deputy Commissioner, Cachar,

To—J. Blair, Esq., Bhanga Bazar.

I have the honour to acknowledge the receipt of your letter No. P.-153—5, dated the 2nd February 1918, and to say that no such letter as referred to by you can be traced in this office. Government actually does claim mineral rights in all land given out under the Rules of 1854, whether the land revenue has been redeemed or not, provided that no special stipulation to the contrary was made in the particular lease under consideration.

No. 6058-R., dated Shillong, the 21st December 1917.

From—C. S. Gunning, Esq., I.C.S., Under-Secretary to the Chief Commissioner, Assam,

To—The Commissioner, Surma Valley and Hill Districts.

I am directed to acknowledge the receipt of your Memorandum No. 8390, dated the 5th December 1917, regarding the grant of a prospecting license to Mr. J. Blair over an area of 114·3 acres in the district of Cachar and to say that the Chief Commissioner accepts the recommendation of the Deputy Commissioner that the application should be struck off, if Mr. Blair cannot see his way to accept the terms offered within three months. Mr. Blair may be informed accordingly.

No. P.-46—5, dated Bhanga Bazar, the 10th November 1917.

From—J. Blair, Esq., Bhanga Bazar P. O., Sylhet District,

To—The Deputy Commissioner, Cachar.

In continuation of my letter No. P.-10—5 of 8th ultimo.

On enquiring further into the matter of indemnifying Government against any claims by third parties in respect of a prospecting license over 114·3 acres, part of Dholidpur and Chandpur grants. I find now that it would be impossible to raise capital on any such terms and I, therefore, suggest that Government clear up the matter and give me a clear prospecting lease.

It is unreasonable for Government to expect me take up an unlimited risk as suggested. I am writing, therefore, to say that I cannot agree to the conditions without further consideration of the matter.

No. P.-10—5, dated Bhanga Bazar, the 8th October 1917.

From—J. BLAIR, Esq., Bhanga Bazar P. O.,

To—The Deputy Commissioner, Cachar.

I beg to acknowledge receipt of your Memorandum No. 1725-R. of 4th September 1917, and in reply beg to say that I agree to indemnify Government against claims by third parties denying the title of Government to dispose of the underlying minerals under the area of 114·3 acres falling within the Chandipur and Dhalidpur grants.

No. 4166-R., dated Shillong, the 20th August 1917.

From—The HON'BLE MR. J. E. WEBSTER, C.I.E., I.C.S., Chief Secretary to the Chief Commissioner of Assam,

To—The Commissioner, Surma Valley and Hill Districts.

I am directed to refer to the correspondence resting with your letter No. 4599, dated the 22nd June 1917, regarding the grant of a prospecting license to Mr. James Blair over an area of 114·3 acres in the district of Cachar falling within the Chandipur and Dhalidpur grants originally settled under the rules of 1854 but subsequently redeemed.

2. In reply I am to say that the Chief Commissioner is prepared to grant a prospecting license to Mr. Blair as proposed provided that he undertakes to indemnify Government against possible claims by third parties denying the title of Government to dispose of the underlying minerals. I am to request that you will be so good as to submit a draft prospecting license, in the revised form prescribed by the Government of India, for the approval of the Chief Commissioner if Mr. Blair agrees to give such an indemnity.

WITNESS NO. 412. *Mr. D. Ferguson*

MR. D. FERGUSON, *Tea Planter, Sylhet, representative of the Surma Valley Branch, Indian Tea Association.*

WRITTEN EVIDENCE.

Financial Aid to Industrial Enterprises.

So far as the tea industry is concerned, there is no necessity to arrange for any capital for the development or encouragement of it in any way. The necessary capital awaits anyone who wishes to run on business lines. Capital.

The help to new industries should be carefully extended so as not to interfere with existing industries, or the extension of ordinary cultivation, which the Government of the Province have been doing all in their power to extend.

The indigenous labour is quite inadequate for the ordinary paddy and similar cultivation, in fact, the enticement of imported labour from Tea estates, for ordinary cultivation, has had to be seriously considered already.

The above remarks on capital practically cover this question also. Circumstances might easily occur where these could be established with great advantage. Pioneer Factories.

The Assam Government's experiment in Kamrup with sugar growing is a case in point. So far as the labour question is concerned it seems to be quite satisfactorily answered.

The results of this experiment tend to show that this extension of sugar cultivation can only be made by capitalists as the cost of steam cultivators, etc., show that the ordinary cultivator is not likely to do much here.

With a large central factory established, there is no reason why the ordinary settler should not grow the canes for sale to it.

I know of no case locally where co-operation has helped any scheme along. Co-operative Societies.

Co-operation is in its infancy amongst us.

Technical aid to industries.

There is no doubt that technical instruction is a most important matter in all industrial development. Technical instruction.

I doubt, however, whether such technical instruction as our limited provincial opportunities could afford would be much good.

I fear that as in the past we must send to Calcutta or some other centre for this form of training.

Given good foremen in our factories, in Assam, we could very soon train up youngsters as the opportunities in our factories are not to be despised, given the expert teacher. At present our training is as a rule of the crudest. Even in the case of engineers imported from

abroad they are as a rule young men without any experience, except the most ordinary bench work.

Research and Demonstration.

Research in England cannot benefit us, I fear, except in certain cases where the person or firm requiring it would at once get the information or assistance they wanted direct. Demonstration factories could be of the greatest use if the necessity for them were clearly indicated.

There has been nothing of the sort in our province but I have seen efforts of this sort in the United Provinces which did much to help industrial development. Sugar for example. There was also the oil mills at Cawnpore, which the Home Government nearly paralysed by their abrupt and absolutely unnecessary withdrawal. It, however, had made such progress that European firms were tempted to take it up.

Assistance in marketing products.

Assistance in marketing products.

This is as essential as financial assistance and is closely bound up with freights by railway or steamer.

To illustrate this, I must again refer to the Experimental Cotton Seed Factory at Cawnpore.

On visiting the factory I was told that I could have cotton cake at a very low price as they had in the early stages of the experiment no market for their produce. On my return to Sylhet I enquired from the different transport companies for a through rate for the cake. The rate quoted was 300 per cent. more than the price of the produce. Of the best agencies for this purpose I know nothing.

Training of labour and supervision.

General remarks.

There is no training at present of any sort worth mentioning in our province. For mechanical work there is nothing to beat the old apprenticeship arrangements. The complaint is very general that no scientific training makes up for the want of a persistent practical training.

The difficulty in the initial stage I have already referred to. I have run a night school for 21 years on the factory on which I am employed. In the first place a night school must be well lighted or it is a severe strain on the eyes. We use an ample electric light and the bright cheerful light makes it very popular. I would not like to say that the night school makes much difference. I would, however, not like to stop it.

No training school should be under the Educational Department.

Training schools under the control of engineering firms or railways are very successful outside that, perhaps, it would be well not to refer to them.

General official administration and organisation.

An Imperial Department necessary.

I have very decided opinions on this subject. With the Commerce and Industry Department in touch with the commercial life of the country I should like to see all effort concentrated in this as a strong Imperial Department, with responsible representatives in each province and in each industrial centre. This department should include control of, and information regarding, all labour conditions. It should also include all experts for enquiring into and advising on all industrial and commercial matters.

A strong department like this would tempt the right stamp of men to remain in the department and be satisfied with the promotion within it.

Without the experience that long training gives we cannot hope to have that high trained efficiency which alone can compete with foreign enterprise.

Provincial effort is too narrow, too confined to tempt the brilliant man except as a temporary arrangement.

This department should be recruited from the most brilliant experts whether already Government servants or not.

This is a Utopian ideal which I fear will not be realised.

Reference Libraries.

This if possible would be appreciated by all. Even the publications under Government control would help considerably if they were supplied at some centres convenient to the general public.

Government organisation for the collection and distribution of commercial intelligence.

Official publications.

I fear that but few are aware of the existence of this department.

The *Indian Trade Journal* is less widely known than similar papers of foreign origin.

Monographs of different departments contain a good deal of information though as in the Forest one it is of a negative kind.

Other forms of government action and organisation.

Lack of transport facilities.

Roads, railways and waterways. In all these essentials we are deplorably handicapped. Perhaps we should also include our shipping port at Chittagong, which gives none of the

facilities which such a port should have. The jetties which belong to the Assam Bengal Railway Company are excellent, and have modern facilities for shipping but alas the waterway is deficient. We should not require the facilities for detention of cargo so much, as the facilities for despatch. The railway is also under the incubus of a crushing capital.

The only thing that could have helped it was liberal extension of feeder lines. This, however, requires still further capital, so we have to await the time when this is realised.

Recent misfortunes have further handicapped them.

River Steamer Transit has made enormous strides but they seem to be hopelessly handicapped with the natural conditions on the bulk of our waterways.

The extension of our feeder railways would seem to be a sore point with our steamer companies as soon as any extension scheme is mooted, they claim certain headway in the bridges which increases the cost to a prohibitive extent.

I fear that generally the matter is looked upon as one only for the railway and steamer companies. There is, however, a further and a much greater interest and that is the public interest, and anything that hampers public expansion should be very carefully handled. We have also to bear in mind that in our minor extensions the steamer companies have only an interest for a very limited portion of the year.

I fear that our Governments hesitate in the matter, not always giving the public side of the question the attention it deserves. I would suggest that in matters—postal, railway and shipping companies—there would seem to be an opinion quite generally accepted that their interests come a long way before public interests. Our communications generally are deficient and our port will not permit of loaded steamers leaving. There would seem to me to be something here of considerably more interest than the encouragement of further industrial development.

Forest Department.

This department has sat to my knowledge for over forty years watching the wanton destruction of the most magnificent forests the eye of man ever saw. On the complete destruction of all that was worth having they step in and save the grass from the cultivator and add to the miseries of his humble life, by impounding and harrying him until he thinks it unbearable, especially after the years of wanton rioting amongst everything worth protecting. If the Government does not mean to plant the forest areas why not lease them out to be some good?

Cottage Industries.

In this direction there seems to me to be room for almost endless expansion. Our hill tribes have an inclination towards this sort of work due in a great measure to their being in the past, isolated communities, and therefore self-dependent. The Manipuis are much the same, weaving and dyeing being their chief forms of industry. Their weaving arrangements are of the most primitive kind and I am sure that they will welcome any assistance given. There is of course the attitude of suspicion due to their not crediting that the Government can be disinterested in any matter. Time alone will cure this but meanwhile strong efforts are I know being made by our Government to help them along. This is a direction in which opening out markets will be of the greatest benefit. Not only to open new markets but to suggest new designs which would meet with ready sale. Many of the things at present produced are bought for their curious style, but the purchase is not repeated. There is nothing to prevent designs being encouraged that would meet with a heavy demand. This comes within the scope of our Art Department and should be one of the branches of the Commerce and Industry Department.

This department might well try to influence all production.

Oral Evidence, 14th January 1918.

Mr. C. E. Low.—*Q.* What artificial manures do you particularly require in the Surma Valley?—*A.* We are using a lot of rather concentrated ones, but generally we use oil cake; and in phosphates we have been using particularly basic slag. There is a scarcity of that now. We now use an inferior kind of slag. We also use ground limestone which is not a manure, but which is required for putting the soil in appropriate condition: it renders the soil alkaline.

Q. Do you use any nitrates?—*A.* Yes, we do. I have been using nitrates occasionally, but not often; these salts are so easily removed by heavy rains that we use them as little as possible.

Q. Do you use saltpetre?—*A.* I have been using some saltpetre this year, and I think it is about the best that is to be obtained in the market now.

Q. Do these manures arrive in satisfactory quality? Is there any guarantee?—*A.* None whatever, that is a serious difficulty; but it ought to have been removed by our own Tea Association. The quantity that we use is so much that we should have established a standard ourselves which the sellers should conform to.

Q. You are very big consumers, I suppose?—*A.* We use a large quantity.

Q. You are the main consumers for a large proportion of certain types of manures in India?—*A.* Yes, that is so.

Q. You are speaking of the expansion of the sugar growing experiment in Kamrup: sugar and tea are grown in pretty much the same kind of land, aren't they?—*A.* No, there is one thing about sugar. Sugar grows in alluvial soils.

Q. You can grow tea pretty well anywhere, but not sugarcane?—*A.* Exactly. In this experiment in Kamrup, the first experiment was made very near the banks of the river; it was a failure and then they moved it on much higher and where tea would grow almost as well as sugar.

Q. Do you think there is likely to be any conflict between the claims of tea and sugar growers?—*A.* I think Government have answered that question very successfully so far as that goes, but that method need not be continued. Such pioneer sugar factories as Government undertake may be given out to private enterprise; they can be run successfully, there is no doubt about that.

Q. Looking to Assam as one of the probable main sources of supply of white sugar in this country, do you think any arrangement should be made at this stage to mark out the areas respectively for tea and sugar?—*A.* I should say so, because there is such a huge area in Assam lying waste and it is not likely to be required for growing tea, as we have such large surplus lands already in our hands for tea. Only about one-fourth of the area we have taken is under tea.

Q. How will the labour proposition from the sugar point of view work in with the labour proposition from the tea point of view?—*A.* Well, as regards labour for tea you want almost an equal supply all the year round; for sugar in the early months when the soil is prepared and planted you want a large labour force and then there is a long interval when you let the force out for other cultivation; then when you begin sugar making you of course want a large force again, so that sugar would work with the ordinary rice crop quite well, growing the rice crop in between two sugar seasons; rice would take up the labour set free by sugar.

Q. Sugar labour would come on from about the end of November till about March or April?—*A.* Yes, from that time they would come upon the land for rice cultivation and planting for the next year.

Q. Then the season for sugarcane ceases and it won't clash with tea more than any other crop?—*A.* Yes, but on the lines which Government have run that, there would be likely to so spring up a lot of small holders of sugarcane land, which—if they sell their canes to the central factory—would answer the purpose of Government. Their labour could also occupy the lower rice lands which though unsuitable for sugarcane are excellent for rice cultivation, that is on the low lands nearer the river.

Q. Speaking on the question of labour in factories you say "Given good foremen in our factories in Assam, we could very soon train up youngsters as the opportunities in our factories are not to be despised, given the expert teacher. At present, our training is as a rule of the crudest." What type of men have you got in mind? What sort of pay do these foremen get?—*A.* For ordinary work we get the Punjabis. The highest pay they get is Rs. 50 or 55. I am getting these men for out-door work as overseers, and for in-door work I am paying Rs. 30.

Q. Who are those men, are they mechanics, or do they control labour?—*A.* They come in as mechanics, but I want them to train themselves as foremen.

Q. For controlling labour?—*A.* Yes.

Q. You don't mean expert mechanics?—*A.* An expert mechanic gets Rs. 50; we pay up to Rs. 80 for a real mechanic.

Q. Where do you get that type of man from?—*A.* I have got three mechanics for my factory within the last three months; there were two of them from Calcutta, they had no knowledge of mechanics whatsoever; there is an absolute scarcity of mechanics at present owing of course to Government necessities.

Q. Of course war position is quite different, but what was the position before the war?—*A.* Then we were getting them from Calcutta; but they were not really so efficient as the men available in the mofussil.

Hon'ble Sir R. N. Mookerjee.—*Q.* What class of men are they?—*A.* I have some Eurasians, some Hindus but at present mostly Mussalmans.

Q. Are they educated men, are they students of the engineering colleges?—*A.* No; we cannot get any of these classes.

Mr. A. Chatterton.—*Q.* Do you know what is understood in England by a mill-wright? *A.* Oh, yes.

Q. Are these men whom you just mentioned mill-wrights?—*A.* They are not as good as that. Some of them are Chinamen; they are good and they can sketch.

Q. Where do these Chinamen come from?—*A.* There are numerous Chinamen up there; without the Chinamen we could not get on. We have Chinamen also as engineers.

Mr. C. E. Low.—*Q.* Are you speaking of the Upper Assam Valley, not Cachar?—*A.* Of the Surma Valley.

Mr. A. Chatterton.—*Q.* Are you employing largely Chinese mechanics as carpenters?—*A.* Well, we employ them for works, such as buildings. I have four of them putting up a

house from last year, and I am now arranging to take up a new house and I may have to take Chinamen with me.

Q. Do you employ them only as carpenters ?—*A.* Also on iron work.

Q. Are these Chinese wandering about the district from shop to shop ?—*A.* Yes, when they complete work at one place, they go to another.

Q. How do you pay the Chinese ?—*A.* An ordinary mistri, as we call them, gets about Rs. 80 a month ; and in the case of mechanicians who know engineering we pay them 100 to 120.

Q. You are paying these Chinamen more than you pay the natives of the country ?—*A.* Yes. We cannot get men. I sent for men from the Sibpur College with some technical knowledge. I got some, but they had no inclination to go into the mofussil.

Q. Do you know where these Chinamen come from ?—*A.* I could not tell you.

Q. Where do they get their education ?—*A.* I do not know. They are very clever draftsmen ; with a big pencil they will sketch anything you want in a minute for you ; I should think they are taught.

Mr. C. E. Low.—*Q.* You have a night school for 21 years in your factory. Are you teaching the children of the coolies ?—*A.* Yes. The day school is under Government ; the night school is under my control ; the Manipuri children and the Bengali children go to the day school but it is not a large school, sometimes it dwindles down to 12 or 14, but in the night school there are 60 to 70 almost.

Q. Are these children of the coolie class ?—*A.* They are all children of the coolie class with agricultural knowledge. The Labour Commissioner was enquiring into the educational conditions ; he came to my place ; mine was the only school of that sort in the province at the time ; he stayed for two or three days with me and examined the school, and he was astonished at the intelligence of the coolie children compared with the Manipuri or Hindu children ; only up to a certain period they make rapid progress, and they do not go further.

Sir D. J. Tata.—*Q.* Are these children working in the workshops in the day time ?—*A.* Yes, they will not sit idle. But I have been trying to convert the night school into a day school at the request of the Educational Department because they got a report that the night school was interfering with day schools ; so I had a day school but it dwindled away.

Q. What are their hours of work in the factory ?—*A.* It varies. They begin at about 8 o'clock in the morning and go on till about three in the afternoon.

Q. So they work on the average for about 6 or 7 hours in the factory ?—*A.* Yes.

Q. Then they attend the night school afterwards ?—*A.* Yes.

Mr. C. E. Low.—*Q.* What is your idea of running a night school ?—*A.* So that they may be available for agricultural employment during the day.

Q. How many stick to agricultural employment ?—*A.* As soon as they have learnt enough to read figures in English they are promoted to Sirdars.

Q. Do you give any industrial teaching in the night school ?—*A.* Not at all. We have no teacher. The difficulty always is a good teacher, the man I have is an excellent man, but we want another man similarly equipped ; it is too much for one man.

Q. On the question of headway in the bridges, you say that "generally the matter is looked upon as one only for the railway and steamer companies ; there is however a further and a much greater interest and that is the public interest." How would you propose that the public interest should be represented in such a matter as headways ?—*A.* You see most of our rivers are small streams ; in many of them there is water only for two months in the year, but they require an enormous embankment to be drawn up which adds to the cost of the light railways so heavily that they are impossible in small districts.

Q. Supposing there is a dispute as between the railways and the steamer companies about headways : is the local Government or the District Board consulted ?—*A.* Yes. The District Board always sides with the railway in regard to the lowering of the bridge because the too big steamers that we now have take a lot of headway, and if the bridges have to be constructed to suit the height of the steamers, the whole thing collapses owing to the enormous weight on the banks. Of course it is quite possible that some larger steamers want this headway.

Q. Do you think that these things have been decided too much in favour of steamer companies ? *A.*—I think so. They probably advocate their own interests, but I don't see why they should not do so.

Q. Who is the official deciding authority in such cases ?—*A.* I fancy it goes up to the Railway Board eventually.

Q. Do they realise the value of swing bridges at all ?—*A.* No. I fancy that there has been some discussion about the branch line from Budderpore to Lala Bazar which crosses several streamlets ; of course they insist on a high headway which adds very considerably to the cost, but which is not necessary so far as the depth of the water is concerned.

Q. Have you any specific suggestion as to the authority which should decide these questions ?—*A.* I certainly think that it ought to be a scientific one. You must have engineers

who could consider it carefully. If we have not got them here, we could get them from outside, but it is far better to use our own provincial men because no one outside the province has any idea of the local conditions.

Q. Have you any suggestion as to who should be the authority, who should settle these questions?—*A.* I should say that the local Government should appoint a committee who have experience of the subject.

Mr. A. Chatterton.—*Q.* In your note you speak about cottage industries. Has anything at all been done in the direction of improving cottage industries?—*A.* Nothing. There is plenty of work in our district for the expert weaver.

Q. I know Government have done nothing, but has anything been done by private bodies or individuals or missionaries?—*A.* Yes, something has been done in the Karimganj subdivision in weaving; it has been started, probably, by one of the witnesses before you; he is one of the landholders in Beani Bazar; they have a little weaving school amongst the weavers to teach improved methods.

Q. Who started this?—*A.* His name is I think Pabitra Babu.* He started it with a view to benefit the weavers merely, but now a Government expert has been going round regularly and they promised me in January last that they would send this expert to improve the cottage weaving industry in Dakshinbhag which is of a slightly higher grade, particularly the silk weaving by the Manipuris who manufacture very fine cloths though they have got very crude implements.

Q. Are there any missions working among the weavers?—*A.* There is one at Karimganj and there is also one in Moulvie Bazar, of course they teach a good many things which you cannot call scientific; they teach knitting and so forth.

Q. They have no regular industrial schools?—*A.* No, they leave nothing of that sort. The Manipuris are entirely Hindus and they don't go near these missions but they have always been great weavers.

Q. Have you any practical experience of silk rearing or silk cultivation?—*A.* No except what I have seen in Assam. I have been through all the silk places at Shillong with Rai Bahadur B. C. Basu when they were under the control of these German missionaries. Beyond that I know nothing.

Q. What did you see at Shillong, was it a silk house?—*A.* Yes. The last time I was there it was entirely conducted by the German missions and they had a lot of Khasi girls feeding the worms.

Q. Can you tell us something more about it? This is the first time we hear about this silk house in Shillong.—*A.* It was part of an abandoned fruit garden.

Q. Was it in the upper plateau?—*A.* In the upper wing of the lower plateau; about half way up; there was another fruit garden. I know every inch of the place because it was on my advice that Sir A. Earle closed it down as it was too exposed to the winds.

Q It was a fruit garden and this house was part of the arrangements; then the house was made over to the German fathers, and they used it for rearing silk; they planted nearly the whole of that fruit garden area with mulberries for the feeding of silk worms?—*A.* Of course it was under the control of the German fathers, but I believe that part of it has collapsed. I have got the last year's report on it and I find no mention of them.

Sir F. H. Stewart.—*Q.* Have any suggestions to make about the policy of the forest department as the result of your long experience?—*A.* I do not know that I have. Mine is merely a general experience, I have no expert knowledge; but when I first came to Kachar over forty-three years ago the whole country was a most magnificent forest, you could ride from one end of the valley to the other through trees, but they have gone gradually back now. From my bungalow you can see over the hills quite 100 miles and there is now no tree left; then bamboos grew on it and the Forest Department cut and sold them.

Q. Is this due to the policy of the Forest Department, and in what way?—*A.* Yes.

Q. Do you think that the rules and regulations should be revised?—*A.* I think so. Something should be done. They are producing nothing now. This area is all full of grass for cattle now.

Sir D. J. Tata.—*Q.* With reference to monographs you say that the forest one is of a negative kind: what do you exactly mean?—*A.* They give us information which is of no value whatever to us, not even for the Forest Department. I have got one on tea boxes with me; well I can extract nothing from it except the deplorable fact that there is no wood for boxes. It does not matter very much to me because I have never used country boxes. I use Russian boxes.

Mr. A. Chatterton.—*Q.* I think you stated in answer to Sir Francis Stewart that formerly round your house it was all covered with dense jungle and that was all cut down?—*A.* A great deal was cut, all nearest the river was used for building and box-making.

Q. Then came the era of bamboos, the bamboos flowered and they all died?—*A.* Yes and the young shoots were destroyed by cattle, and gradually the whole thing disappeared.

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* Babu Pabitranath Dass. Witness No. 407.

Witness No. 413.

Mr. James Laurie, *Tea Planter, Naraincherra.*

Written Evidence.

The possibilities of the cultivation and preservation of certain fruits in the Surma Valley has long been recognised. The pine apple does exceedingly well in the district and is a cultivation peculiarly well suited to the small cultivator. It does not require a large plantation before it becomes profitable. A cultivator can profitably cultivate a few *nulls* and can always be increasing his area by annual propagation of his plants without interfering with the supply of fruit. The cultivation of the pine apple requires no particular skill beyond that already possessed by the native cultivators of the district who already cultivate large quantities of inferior varieties. The Assam-Bengal Railway running as it does the full length of the valley, has created conditions well suited for establishing a successful pine apple growing and canning industry by having a central factory erected at a given central point such as Srimangal Station. Unfortunately all my statistics on the pine apple industry in other parts of the world have been accidentally destroyed by fire but the conditions obtaining in the Surma Valley for growing and canning pine apples are equally as favourable as the most suitable countries where they are grown and more favourable than the majority of them. A canning factory could be usefully employed during the pine apple off season by marmaláde making. Possibilities of fruit cultivation and preservation.

As a rule I am not in favour of having an industry artificially bolstered up by Government aid beyond being at all times able to supply information upon all points regarding the industry concerned. In regard to the particular industry with which I am concerned, Government aid might be usefully employed so far as distributing superior varieties of plants to cultivators without creating an artificial prosperity which would collapse upon withdrawal of support. The inferior varieties of pineapples now generally cultivated in the Surma Valley should be replaced by the best varieties procurable. The latter are now procurable at comparatively cheap rates. This kind of aid could have no ill effects as it would merely be supplying the cultivator with the wherewithal to propagate and cultivate and it would be left to himself to quadruple the numbers of his plants annually. I have lately been in correspondence with the Agricultural Department, Hawaii, and also that of the Phillipine Islands. The latter only started pineapple canning 4 years ago but is progressing rapidly. The Hawaiian annual output of canned pines amounts to six million dollars and the fresh fruit sold as such amounts to 50,000 dollars which produce is used up by the American market. I have been promised more practical information on the subject which I will give in my oral evidence before the Commission. Government aid to industries.

The pine apple industry in Hawaii is, next to sugar growing, their most important industry and the area under cultivation is increasing annually.

Oral Evidence, 14th January 1918.

Sir F. H. Stewart.—*Q.* Have you made any experiments on a commercial scale in the growing of pine apple?—*A.* Yes.

Q. With what results?—*A.* With very encouraging results. I have sent them all over India.

Q. You have studied the subject in other parts of the world too. You say you have a ot of literature on the subject?—*A.* Yes.

Q. It is a large industry in Florida?—*A.* More especially in Honolulu, Hawaii.

Q. Do they export from Honolulu in tins or how?—*A.* In tins mostly. Canned pines amounting to six million dollars and fresh fruit to 50,000 dollars are exported from Honolulu.

Q. During the off-season you suggest that the factory may be employed on marmalade making?—*A.* Yes.

Q. Have you also made marmalades successfully?—*A.* Yes.

Q. You are not in favour of Government help in most cases. You think that in this case Government should start a small model factory?—*A.* They might do so and afterwards they could sell it, but I do not think it would be necessary for Government to do so. I think it would not be difficult to raise capital and build a factory.

Q. Is it a pursuit which would appeal to the people of the Surma Valley? Do you think that the Indians there would take it up? Would the people of the place grow pines for you willingly enough?—*A.* Yes. They are keen on it, but hitherto they have had no outlet.

Q. You would like Government to distribute pine apples of a better class?—*A.* They might do so, and help ryots in that direction. It could be done cheaper in the Surma Valley than elsewhere.

Q. Is it a crop which would be liable to sudden failure in case of bad hailstorm? Would that destroy the crop altogether?—*A.* I have not experienced it. Hailstorms would destroy it but not permanently.

Q. Could you insure against damage by hailstorms for instance?—*A.* That might be accomplished in time. It is a very young industry now and it has not been tried.

Q. Are you proposing to develop it yourself or to take it up yourself on a larger scale?—*A.* What I intended to do was to run a factory at a central place like Srimangal station on the Assam-Bengal Railway, and up and down the line right up to the end of the valley to grow fruit and can it ourselves. There are seven acres now.

Q. Would seven acres be sufficient for a factory?—*A.* It would be a very good start.

Q. What is the yield per acre?—*A.* About 14 to 20 tons per acre.

Mr. A. Chatterton.—*Q.* How long would the pine apple season last?—*A.* It depends on the kind of pine apple that you grow. If you have "Queen," it will last about six weeks, from June to end of July. There is what is called "Smooth Cayenne" also known as "Kew Giant" which comes on in succession.

Q. You could have pine apples growing for four or five months?—*A.* Five months with pine apples.

Sir F. H. Stewart.—*Q.* Would you grow pine apples continuously or would you require rotation of any sort?—*A.* Not necessarily if you manure properly. One pine apple plantation could go on from 10 to 14 years, but that is with rational manuring and attention paid to thinning.

Q. Would you combine it with other fruit growing?—*A.* Yes, I could combine it with other fruit growing. I would keep the factory employed all the year.

Q. What sort of fruits?—*A.* Oranges, lemons, etc.

Q. Would you grow limes?—*A.* Yes. Lemons more than limes.

Mr. A. Chatterton.—*Q.* In Sicily they grow lemons?—*A.* Yes.

Q. Very largely, for the manufacture of citric acid?—*A.* Yes.

Q. Can you do the same in Assam?—*A.* Most decidedly. We can grow fruit as cheaply as they do. In the Surma Valley we can compete with any part of the world so far as lemon growing is concerned, or orange growing or pineapple growing. It is better situated than many other countries for pine apple growing.

Q. Can you grow bitter oranges such as are used to make marmalade?—*A.* Yes. But they are not grown at present.

Q. Can you grow citrons for candied peel?—*A.* Yes.

Q. What manure do you use for pines?—*A.* I have been using oil cake and phosphates and sulphate of potash. But oil cake is a good manure and you can use it.

Q. With the heavy crops that you get do you want to use much manure?—*A.* Not very heavy manuring if you use proper manure.

Q. Have you got information as to what it will cost to set up a factory?—*A.* Yes. 15,000 American dollars to deal with 50,000 cases containing 24 tins each annually.

Q. Does that include a tin making plant?—*A.* It includes everything the factory requires, all machinery.

Q. What do you expect that you would make on an investment of half a lakh rupees on the factory?—*A.* About 20 per cent at the least judging from growers' reports.

Sir F. H. Stewart.—*Q.* You want to pay a good profit because it is a risky enterprise?—*A.* Not on account of its being a risky enterprise. It has been considered from every conceivable point and no risk has been discerned.

Mr. A. Chatterton.—*Q.* In an industry of this kind the difficulty would be in advertising the products and building up a market. What other capital do you want for cultivating pine apple besides the factory and the machines?—*A.* You want to know the capital required to bring into bearing an acre of pine apple independently of the factory? That would mean the cost of the plants. If I buy plants from Australia, or the Phillipines or Honolulu, the actual cost there is 6 dollars per thousand for the "Queen" or the "Giant Kew." These are the very best kinds that you can have for canning or any other purpose. To bring the plants here it will cost as much if not more again.

Q. Have you got a sufficient number of these plants on your own estate to develop it?—*A.* Yes. Besides the seven acres I have got, I have sufficient plants to plant twenty to thirty acres.

Q. How many plants do you put to the acre?—*A.* 10,000 plants.

Q. What price would you be prepared to supply 10,000 plants at?—*A.* At a very low price. I will supply them less than they can buy either in Australia or elsewhere, that is, I will supply them at one anna each plant. But that price is only for native cultivators of the Surma Valley to encourage the establishing of the industry there.

Q. Could you bring a plantation into bearing for ₹1,000 per acre?—*A.* ₹1,000 per acre would cover everything. The selling price of an acre of "Queens" in Queensland is £150 to £200, but it costs at least three times as much there to bring an acre into bearing.

Q. How many acres would you want to keep your factory going?—*A.* It depends upon the size of the factory.

Q. This 50,000 case factory for which you have estimated ?—*A.* Multiplying 50,000 by 24 it comes to 1,200,000 fruits.

Q. Would you get 10,000 fruits from an acre?—*A.* The yield depends upon so many factors that it is difficult to make a definite statement. 75 to 85 per cent. of plants may be expected to grow fruit but Florida growers get even 95 per cent.

Q. What is your experience in the matter? What percentage do you get?—*A.* I have got about 70 to 75 per cent. My section has not been in full bearing hitherto. I have been extending it.

Q. At least you can get 60 per cent. ?—*A.* Yes.

Q. You arrive at this result. Taking it at 60 per cent. which I prefer to take as the safe figure you want 200 acres to keep your factory going for 50,000 cases ?—*A.* Yes.

Q. What could you sell a case for?—*A.* Honolulu wholesale price is sixteen shillings (4 dollars) per case.

Q. Could you get four annas a tin for it at the factory ?—*A.* Yes, by all means. They get more in the Phillipines.

Q. You have no experience as to what the cost of canning would be ?—*A.* I do not know. I could not say that. The cost of canning is at the present time very prohibitive.

Sir D. J. Tata.—*Q.* If you can the fruit now where do you propose to get the tin cans ? You cannot get anything now ?—*A.* Not now, till the end of the war.

Mr. C. E. Low.—*Q.* How much are the cultivators willing to accept as a price for pine apples ? Have you any idea ?—*A.* About one anna each.

Q. Is there a large sale of pine apples on the spot by cultivators in the *hats*?—*A.* There is a great demand for the "Queen" pine apple and the "Smooth Cayenne," otherwise known as "Giant Kew."

Q. Of course, a man growing a large quantity would probably accept a less price from a factory taking large regular supplies?.—*A.* He will reduce the price. But I can sell all my crop locally wholesale at the present time for 12 annas per dozen.

Q. Have you any idea as to railway freights? Most of your market would be Calcutta?—*A.* Half the ordinary rate, that is, Rs. 1-8-0 per maund to Calcutta from our place. The rate per ton, I think, is much less, or, at least, ought to be.

RANGOON.

Witness No. 414.

Burma Chamber of Commerce.

Burma Chamber of Commerce.

Written Evidence.

Financial aid to Industrial Enterprises.

Q. 1.—A few years ago a great deal of capital was raised in Rangoon for various industrial and mining concerns. No difficulty was then found in getting money. The financial conditions brought about by the war have so altered conditions since this question was framed that it is difficult to give any authoritative answer; but we think money would still be forthcoming for any sound proposition that was properly introduced and under good management. Sources of capital.

Q. 2.—Money was raised locally and in India for most of the concerns floated locally.

Q. 2 (*a*).—Before the war there would have been advantages to India generally in attracting more capital from the United Kingdom. But the home investor is much more cautious than the Indian. He would only invest in more or less proved concerns introduced by first-class people. It is probable that for some number of years after the war there will be employment found at home for all the available capital, and it is doubtful if the financing of new ventures in India will hold out much attraction to the home investor, especially now the Indian income-tax has been raised, and if the double collection of income-tax at home is still persisted in.

If the Indians can be educated to entrust their savings to banks instead of hoarding or converting their wealth into gold and silver ornaments there would be an immense increase in the funds available for extending and furthering the country's industries. Better education of the masses would contribute towards this. Unfortunately, of late years *swadeshi* banks, run by men of no previous banking experience, were allowed to spring up, with the result that there were failures which further tended to destroy the public confidence. Recent legislation has, however, placed restrictions on such institutions.

Q. 3.—In Burma the rice-milling industry has been much overdone. There are more mills than paddy to go round, and the mills can handle the crop far quicker than the paddy can be brought in. In normal times the mills only work at full pressure for a few weeks—

at the very outside four to six weeks, often less—and the rest of the time they only work at half-pressure and often for many months lie entirely idle. This applies both to Rangoon and the outports—a noticeable instance is Moulmein, where there are many derelict mills, and the remainder only work a few months in the year.

Q. 4.—None.

Government assistance.

Q. 5.—Of the suggestions for aiding new industries No. 8 (exemption from taxes) is the one that appeals to us most, and this might be of use should occasion arise. Except in special circumstances and, speaking generally (in Burma), we think little Government assistance is required for existing industries. As regards new industries see reply to No. 8. We would lay down that no grant-in-aid or other assistance should be given to a new concern that would compete in the same line with already established concerns, unless it were shown that the existing concerns were quite incapable of carrying out their industry $\frac{\text{and}}{\text{or}}$ unwilling themselves to take aid to bring it to a state of efficiency.

Q. 6.—Is a question for Government to decide. If they lend money they must look after the security of it themselves.

Q. 7.—No experience.

Pioneer factories.

Q. 8.—The greatest industry in Burma, though we are not certain if it comes under the scope of this enquiry, is agriculture. There is a crying need for increased expenditure on Government Agricultural Farms, in the improvement in the tools and methods of agriculture, and mainly in the production and selection of improved seed. This has been started, but on too small a scale. What has been done with wheat in India can be done, and done ten times, over in the case of paddy.

There would also appear to be openings for sugar and pulp and paper factories and jute growing and manufacture.

If for any reason private capital be not forthcoming Government should start pioneer factories for any new industry that holds out reasonable hope of success.

Once a new industry is shown to be commercially practicable there should not be any lack of private capital to exploit it, and Government should turn over their pioneer factory to private hands directly they can do so on reasonable terms. Under no circumstances should Government compete with private enterprise.

Q. 9.—We do not know of any sound well-managed concern being hampered by methods of finance.

Financing agencies.

Q. 10.—The extension and development of co-operative credit banks should receive every encouragement from Government. The existing banks, such as the Presidency, Exchange, and Joint Stock Banks, are quite sufficient to meet the demands put upon them. These banks are not slow to open new branches or extend their influence when any good opening presents itself. The native shroffs and bankers do an immense business in centres where the large banks have not opened.

Q. 10 (*a*).—The banking law at present in existence seems to be adequate.

Co-operative societies.

Qs. 11 & 12.—We have little experience of Co-operative Societies in Lower Burma, but we know they have started on improved methods of agriculture and selection of grain, which is a step in the right direction and should be encouraged. Banking has also been taken up and this should also be of great advantage to cultivators and small industries.

Q. 12 (*a*).—None—the Co-operative Societies take the place of these to a certain extent.

Qs. 13 & 14.—See replies to questions 5 and 8.

Technical aid to industries.

Technical aid in general.

Qs. 15 & 16.—We understand the Geological Survey of India has been of great assistance in the development of the mineral resources of the province. The development of the rubber industry also received great help by the exploitation of the Mergui Crown Rubber Estates by Government.

Q. 17.—We think private firms or companies would prefer to employ their own experts. The best expert opinion has recently at times been brought to India in connection with the oil and mining industries and rubber but, under certain circumstances, a Government expert's opinion might be valuable.

Q. 18.—If a Government-paid expert is loaned to a private business his report should be treated as confidential, otherwise there would be absolutely no demand for the services of a Government expert.

Qs. 19 & 20.—No suggestions regarding demonstration factories.

Q. 21.—Have no personal knowledge.

Research abroad.

Qs. 22 & 23.—Under certain circumstances it might be advantageous to conduct research in England, but we can name no specific case meantime.

Q. 24.—We have no knowledge of the system.

Surveys for industrial purposes.

Qs. 25, 26, & 27.—The existing surveys for agricultural, forest, and mineral areas are at present incomplete. We understand that they are being extended, especially in connection

with the Forest Department, and, when completed, the information, with maps, should be published and made available to the public.

The surveys should be organized with a view to making a resurvey of those areas of the province where the developments of recent years have demonstrated the probability of developing successful agricultural, forest, or mining ventures and to defining other specific areas where successful results are likely to be obtained.

In this connexion we would suggest that further research be made in connexion with coal.

Q. 27 (*a*).—We have no experience of consulting engineers appointed by Government.

Q. 27 (*b*).—We do not think Government engineers should be allowed to undertake the purchase of machinery and plant for private firms. There is a large number of engineering firms in India who not only undertake the purchase of machinery, but its erection and the thereby implied guarantee to see it successfully running. We think private firms would rather purchase themselves, or through such engineering firms, rather than through a Government engineer, who would have no responsibility.

Assistance in marketing Products.

Qs. 28 & 29.—We have no experience of commercial museums. If the principle of the necessity and/or the advantage of commercial museums is accepted we should press for the one in Rangoon, with libraries of reference, assay offices, etc., attached. Commercial museums.

Q. 30.—Not necessary for Burma at present. The minor and unorganized cottage industries, in the majority of cases, appear to find an unaided outlet for their products. Sales agencies.

Q. 30 (*a*).—Travelling exhibitions would, doubtless, be of advantage; they should be on educational lines in the matter of agriculture and improved methods of production. Exhibitions.

Q. 31.—The pioneer industrial exhibition, held in Rangoon in 1916, was a great success; and, if made an annual or bi-annual affair, would, doubtless, lead to improved manufacture and marketing. We strongly advocate the continuance of these.

Q. 32.—Government should certainly take measures to hold and encourage such exhibitions—their measures should be both advisory and financial.

Q. 33.—The exhibitions should be popular in character, otherwise, at any rate to begin with, they would not be a success.

Q. 34.—Trade representatives should be appointed to represent the whole of India, in Great Britain at any rate, in the same way as the Colonies are now represented in London. Representation in the Colonies and foreign countries as a permanent measure might be held over meantime, but it should be made sure that India is fully represented at the fairs and exhibitions that are certain to be held in allied countries after the war, and which have already been started in France at Lyons. Trade representatives.

A radical alteration in the Consular Service would, to some extent, take the place of trade representatives abroad.

The representatives should have a good commercial knowledge. Their duties should be to attract interest in, and push the sale of, all products and produce from India, especially in what promises to be new fields of offtake, in which Indian exports are not well known.

Q. 35.—Possibly; when any special occasion arose.

Q. 36.—Not necessary; the Indian traders are in the closest touch with trade in all the provinces throughout the Peninsula—let alone the European business houses.

Q. 37.—The proposal might be of advantage. Government patronage.

Q. 38.—The purchasing methods of Government might be considerably improved, and far more things of local manufacture purchased, especially from local engineering works. Indian industries should be supported wherever possible.

Q. 39.—The banking facilities for ordinary trade purposes are amply sufficient. *See* also answer to Questions Nos. 10 and 10*a*. Banking facilities.

Other Forms of Government Aid to Industries.

Q. 40.—As a general condition every facility in the way of grants or leases should be given to those wishing to work Government-owned raw materials. Supply of raw materials.

Q. 41.—We think not; the rules for granting land for mining and planting have recently been satisfactorily amended and, so far as we know, there is no difficulty in acquiring land for industrial purposes. Land policy.

Q. 42.—All land concessions should be made on the principle that the industrial development will result in increased commercial activity and benefit to the State.

Qs. 43 & 43(*a*).—We have no experience.

Training of Labour and Supervision.

Q. 44(*a*).—Primary education can scarcely fail to be beneficial to the labouring classes, and thus of direct benefit to industrial development.

We suggest that the principles of hygiene might suitably form a branch of primary education for the labouring classes.

Q. 44(*b*).—The industries themselves, such as oil and rice, and timber mills and engineering shops, form a practical school of apprenticeship in which the more intelligent workmen quickly become proficient in their trades.

In addition to this, a system of apprenticeship exists in most of the industries named, from which satisfactory results are obtained.

Q. 45.—Practical experience which labourers receive is perhaps the best teacher but, as stated above, we consider that a system of primary education would do much to improve the intelligence of workers and their general efficiency.

Apprenticeship system.

Q. 46.—*See* reply to Question No. 44(*b*).

As regards apprentices in the local engineering shops their career is difficult to follow for they are not much given to lengthened periods of service. A number of men are employed as engineers who have qualified locally and obtained their 2nd class engineers' certificates here.

In one of the oil companies better class apprentices are being experimentally trained for responsible and well-paid positions in the laboratories.

Industrial schools.

Q. 47.—The only school of which we have any experience which might come under the heading of an industrial school is the "Government School of Engineering and Technical High School". This has hardly been running long enough to give practical results, but we understand it is well attended, and the boys who study there and complete their course by practical apprenticeship should certainly be more efficient than those who do not study.

Q. 48.—Whatever the system adopted, practical apprenticeship should form a considerable part of it, at any rate for the main industries now existing in Burma.

Q. 49.—So far as we are aware day-schools for short-time employees do not exist in Burma.

There are, however, numerous private night-schools in this town, run and supported by different native communities, for the benefit of the lower classes.

Instruction in these schools is given both in the vernacular languages and in English. Fees, where they exist, are merely nominal, and the teachers are, for the most part, voluntary.

The schools seem to be well attended, and the education received appears to be of material benefit to the students.

There are also in this town several private day- and night-schools for better class students, which provide education in commercial subjects, *e.g.*, book-keeping, shorthand, and typewriting.

Fixed fees for each course are charged in these institutions.

Further, there are two private boarding-schools, under Burmese management, for instruction in English of better class Burmans of more mature age from the districts.

Day pupils are also taken in these schools.

Fees are charged and the instruction is given by paid teachers.

Q. 50.—They should be under a department that is run by practical men, and in whom the practical element is largely represented.

As the Burman has a natural aptitude for engineering and similar manual occupations it may not be out of place to suggest here that, as a branch of ordinary education, subjects such as elementary engineering, carpentry, etc., might, with advantage, be taught in schools.

Promising pupils might follow this up by a course of training in these subjects in an industrial school, encouraged perhaps by Government aid in the form of scholarships, etc.

Training of supervisors, etc.

Q. 51.—Experience and consequent promotion by fitness in factories is the only method of training for the superior grades at present. A course in a Government technical school would greatly accelerate and improve the process.

Q. 52.—We think masters of industries will take care to see that such industries are carried on under the best advice, and that Government assistance is not necessary in the manner suggested.

Q. 53.—Depends entirely upon the nature of the assisted industry. If Government assist they can name their own terms.

Mechanical engineers.

Q. 54.—So far as we know the standard of examination is uniform, and a ticket granted in one province in India holds good in any other.

Q. 55.—Engineers in charge of prime-movers in this province must have a special certificate (ticket).

General Official Administration and Organization.

Q. 56.—Practically none; except perhaps the Weaving Institute at Amarapura, which, we understand, has been most helpful to the silk-weaving industry.

Q. 57.—We do not think a Board of Industries is necessary for Burma. There is already a large number of rich commercial concerns fully capable of developing any promising industry. The large number of recent developments of new industries in the province

confirms this (*e.g.*, oil, rubber, mining, match factories, soap works, rope works, all of which have been started and carried out under the best expert advice).

A Director of Industries to carry out inquiries and improvements in many of the smaller industries, in a similar way to the improvements brought about in the silk-weaving industry, would, doubtless, be of the greatest assistance and help to the industries of the province in general.

Qs. 58—62.—Answered by above.

Q. 62 (*a*),(*b*),8(*c*).—*See* answer to Question No. 30.

Cheroot-making might perhaps be called one and, in this connexion, a private company is already taking steps to improve the quality and curing of tobacco. Umbrella-making is another, and the manufacturers of these find a ready market locally. Weaving of both in silk and cotton exists throughout the province as perhaps the most important cottage industry. Cottage industries.

Organization of Technical and Scientific Departments of Government.

Q. 63.—We think not; unless the Government experimental farms and the Saunders' Weaving Institute may be included among them. As regards the weaving institute we have not sufficient knowledge to make any criticisms. As regards the experimental farms lack of funds has held their development, and consequent utility, back for many years. General.

Q. 64.—For Burma we do not think that at present the formation of any new Imperial scientific and technical departments is necessary. We have recommended the fostering of industrial exhibitions and, under certain possibilities, the establishment of pioneer factories, and, beyond this, we think it is not necessary to go meantime.

Qs. 65—74.—All depend on the establishment of scientific and technical institutions and it is not, therefore, necessary for us to go into these questions.

Qs. 75 & 76.—We have no experience of the Indian Science Congress.

Q. 77.—*See* answer to Questions Nos. 65—74.

Q. 78.—There are no facilities; one has to secure one's own books of reference.

Q. 79.—Government might supply a set of technical and scientific works of reference to some of the free libraries. There would, doubtless, be a demand for these from students and people who have difficulty in procuring their own books of reference. Reference libraries.

Qs. 80 & 81.—We do not recommend a College of Commerce as being necessary for this province. A commercial course might form one of the departments of the new Burma University. College of Commerce.

Government Organization for the Collection and Distribution of Commercial Intelligence.

Q. 82.—The present system of collecting statistics is, we consider, satisfactory; unfortunately, sufficient interest is not shown in these by the commercial community as a whole. Statistics taken from Government figures are, however, now more frequently published in the local and financial papers, and also circulated by the Chamber of Commerce—they are thus becoming better known, and it is not the fault of the Statistical Department if the figures are not more availed of. We have no changes to suggest. Statistics.

Q. 83.—We have no criticisms or modifications to suggest.

Q. 84.—The "Indian Trade Journal" frequently brings to notice matters of commercial and trade importance. It is a most useful publication.

Q. 85.—The trade and financial journals of India, so far as we know them, are well able to support themselves, and we think assistance is not necessary. We think persons either European or Indian who are actively engaged in industries take very good care to keep themselves in close touch with conditions that govern their industry, and this can easily be done from the existing trade journals and market circulars published either here or at Home, and many of which are republished in the local press. Trade journals.

Q. 86.—When a demand for information in the vernacular exists we think a source of supply will very promptly be found in the small local presses. Witness the number of brokers' rice and paddy circulars in Burmese which are spread broadcast over the country during the paddy and rice seasons.

Qs. 87 & 88.—The publication of monographs on any subject is most beneficial to those interested in such enterprises. Copies of the publications should be obtainable at the head-quarters of the district with which they deal. Other publications.

Other Forms of Government Action and Organization.

Q. 89.—In Burma every trade arranges for its own surveyors, either through the Chamber of Commerce or mutually among themselves. Certificates from such surveyors are accepted without question by both buyers of produce and sellers of piece-goods and at Home. There would seem, therefore, to be no need for Government certificates. The conditions of contract and the custom of trade determines for what goods certificates are compulsory and for what voluntary. Certificates of quality.

Q. 90.—The present organization is entirely voluntary and has grown to meet the various requirements of individual trades. Certificates are granted after personal inspection, and on technical knowledge acquired after long experience.

The above two answers apply to industries and trades at present extant in Burma. If other industries should expand, such as the manufacture of soap, glass, paper, sugar, etc., perhaps conditions might alter our views as to the advisability or otherwise of having a Government certificate for such special commodities.

Adulteration.

Qs. 91 & 92.—Not so far as we are aware; food-stuffs in the bazaars are, generally speaking, heavily adulterated, but the new Anti-Adulteration Bill, which is in course of becoming law, will provide for this.

Misdescription.

Q. 93.—The Customs regulations provide for correct descriptions (where one is necessary) on imported goods, but there is no provision of this description for goods of local manufacture.

Trade-marks.

Q. 94.—We are of opinion that British trade interests in India require either (*i*) some system of compulsory registration of trade-marks in India based on that obtaining in England; or (*ii*) that, at any rate, measures should be immediately taken to amend sections 51 and 57 of the existing Act in such a manner as to ensure that particulars of trade-mark registrations are accessible to the public.

Patents.

Q. 95.—We consider that the Indian Patents Act of 1915 and the rules thereunder are ample to safeguard British interests and do not think further special legislation of patents and designs is necessary.

Registration of partnerships.

Q. 96.—It is most desirable from every point of view and quite practicable that a system of registration and a disclosure of partnerships be introduced. This should be made compulsory by law and introduced as soon as possible.

Transport facilities.

Q. 97.—The lack of transport facilities, by road especially, has for many years past been a crying scandal, and hindered the development of the province in every way. The matter is such a large one that it is impossible to go into it here in any detail, but a committee has been appointed by the Lieutenant-Governor, on which all interests in the province are represented. It has been at work for some time past, and it is hoped its preliminary report will be issued at no distant date. The chamber is fully represented on the committee, and will have the opportunity of criticizing the report and recommendations, and we are content to leave the road programme in the hands of the committee. The only recommendation we have to make is that, as the funds available are quite inadequate, they should be largely increased if Burma is to be properly developed.

Q. 98.—We have no suggestions to make.

Q. 99.—The railway system can be usefully extended in many directions. We fear funds will have a retarding influence for some time, but among the most urgent projects are the completion of the Southern Shan States Railway and the railway connection with India. The latter will do more to bring in labour, of which Burma is in such need, than anything else.

Q. 100.—The extension and improvement of waterways come under the scope of the Committee for Communications. *See* answer to Question No. 97.

Q. 101.—As a general rule, in ordinary times, no.

Hydro-electric power surveys.

Q. 102.—Nothing, so far as we are aware; if there are any possibilities of such power being made available this should be an opportunity for a special Government expert or commission.

Q. 102(*a*).—No.

Mining and prospecting rules.

Q. 103.—There are no insuperable difficulties, provided these rules are sympathetically administered.

Q. 104.—We do not view with favour Government working mines themselves. It is wise to appeal to capitalists and offer them encouragement.

Forest Department.

Q. 105.—The Forest Department is, we believe, termed a quasi-commercial department. If this is really to be so the methods of recruitment to the service should be different and it should have two departments, scientific and commercial, with two separate cadres. The present method of training does not fit them for dealing with commercial problems, and a very large portion of their time, which is badly needed for the scientific upkeep and improvement of forests, is spent in revenue work, which is probably not attractive to them.

It should also deal with lessees and licensees and devote its whole time to the very many problems that arise if forests are to be worked to the best advantage. We do not propose to go into any detail here as details will, doubtless, be adequately dealt with by the separate representations of the timber firms; but we consider that it is outside the sphere of the department to enter into commercial competition with timber firms in the sale of converted timber.

Q. 106.—The cost of extracting forest produce could possibly be reduced by constructing district roads.

Q. 107.—This is a question for a forest officer with a special training.

Q. 108.—Except such as are introduced and paid for by lessees and licensees there are no arrangements for forest transport in Burma.

In recent years the Forest Department has done a little in the way of opening roads for use in the touring season, but this is all that is done.

Q. 109.—We leave this to the Trades Association. Jail competition.

General.

Q. 110.—Answers to previous questions have already covered this.

Q. 111.—The salt industry is one that occurs to us as being capable of development in Burma under scientific methods. Also pottery and porcelain. There are, doubtless, others.

Q. 112.—We have no knowledge of this.

Q. 112(*a*).—For many years the surplus paddy husk has been wasted. Many experiments have been made with a view to utilizing it, but without success. This is perhaps a matter that a Government expert might take up.

Q. 112(*b*).—This has also been referred to in answer to previous questions. The increased efficiency of agricultural experimental farms should lead to the improvement of raw materials generally.

Q. 112 (*c*).—The Burma Chemical Company is, we think, to a great extent, dependent upon supplies of raw materials from abroad. We do not know of others.

Q. 113.—Salt, china clay, increased sugar production, paper and pulp material might all come under this heading.

ORAL EVIDENCE, 22ND JANUARY 1918.

The BURMA CHAMBER OF COMMERCE *was represented* by :—

1. THE HON'BLE MR. E. O. ANDERSON.

2. MR. W. BUCHANAN.

Hon'ble Sir R. N. Mookerjee.—*Q.* This written statement represents the views of the Burma Chamber of Commerce?—*Hon'ble Mr. Anderson.*—*A.* Yes.

Q. You say in reply to Question No. 1, "The financial conditions brought about by the war have so altered conditions since this question was framed that it is difficult to give any authoritative answer; but we think money would still be forthcoming for any sound proposition that was properly introduced and under good management". Do you mean locally?—*A.* No; a certain amount will come locally, but not much.

Q. In your experience have you ever received any money from any Burmese?—*A.* Personally, I have never tried to raise money from Burmans. Some years ago a good deal of money was got from them but I do not think that can be done again.

Q. Do you believe now that if any sound proposition is introduced money would be forthcoming from the natives of Burma?—*A.* From some of the wealthy natives of Burma.

Sir D. J. Tata:—*Q.* What do you mean by 'natives'? Burmese or Indians?—*A.* Indians.

Q. You have a large colony of Indians who are fairly well off?—*A.* Very well off.

Q. Do they take any interest in industries?—*A.* They do.

Q. They are the principal people who run all the things?—*A.* Yes; like Mr. Jamal and several others.

Hon'ble Sir R. N. Mookerjee.—*Q.* In reply to Question No. 8 you say, "Unfortunately of late years *swadeshi* banks, run by men of no previous banking experience, were allowed to spring up, with the result that there were failures which further tended to destroy public confidence. Recent legislation has, however, placed restrictions on such institutions". You think the present legislation about banking does not require any modification?—*A.* Yes.

Q. You do not think that any more safeguards are wanted?—*A.* No; we have recommended that co-operative banks should be extended.

Q. In answer to Question No. 27 you say, "We do not think that Government engineers should be allowed to undertake the purchase of machinery and plant for private firms". What is your reason for this?—*A.* There are so many engineering firms in the country already. It would interfere with private enterprise.

Q. In answer to Question No. 49 you say, "There are also in this town several private day, and night-schools for better class students which provide education in commercial subjects, *e.g.*, book-keeping, shorthand, and typewriting". Are these schools recognized by Government?—*A.* There is one, so far as I know, which is recognized by Government to some extent.

Q. Have you any experience of any students coming out from these schools? Have the members of your chamber employed any of these boys?—*A.* When I visited one of these schools there were thirty people from one of my own mills there—all sorts of people—learning to read and write so as to keep accounts.

(*Mr. Buchanan.*—In my office, too, a course of study in these night-schools has been found to be of great advantage.)

Q. What are the prospects of these students?—*A.* They probably rise to Rs. 100 or Rs. 120 a month, or higher.

Q. Are they Burmese, and not Indians?—*A.* Both; I am talking of Burmese just now. *Hon'ble Mr. Anderson.*—The people I am speaking of are Indians.

Q. You do not think that a Board of Industries is necessary here? *Hon'ble Mr. Anderson.*—*A.* No; we think we may start with a Director of Industries to begin with.

Q. You say, "The large number of recent developments of new industries in the province confirms this, *e.g.*, oil, rubber, mining, match factories, soap works, rope works, all of which have been started and carried out under the best expert advice". Are these all European concerns?—*A.* One match factory is an European concern, the soap works is an Indian concern, a big paper mill has been started by Indians. One match factory is Chinese-owned.

Q. They are not Burmese? But for the Burmese do you not think that a Board of Industries and a Director of Industries are necessary for the development of industries to be run by Burmese?—*A.* Eventually; to start with, I think the Director of Industries will be sufficient. (*Mr. Buchanan.*—With an adequate staff and an advisory board.)

Sir F. H. Stewart—*Q.* You say that you do not think that any further banking legislation is necessary?—(*Hon'ble Mr. Anderson.*—*A.* I do not think so.)

Q. Have you any trouble here about bogus or unsound banks?—*A.* No; one has disappeared, but it was not a bogus bank.

Q. Has the Bank of Bengal a local board of directors?—*A.* No.

Sir D. J. Tata.—*Q.* You say in reply to Question No. 2(*a*), "Unfortunately of late years *swadeshi* banks, run by men of no previous banking experience, were allowed to spring up, with the result that there were failures which further tended to destroy public confidence". Just now you said that there were no *swadeshi* banks?—*A.* We were speaking of India then, and not of Burma. They had rather a bad effect—the *swadeshi* banks of India. The Burmese do not like them.

Sir F. H. Stewart.—*Q.* I understand that co-operative credit societies are doing well in Mandalay. Is the co-operative credit system spreading in Burma?—*A.* Yes.

Q. Do you know anything about the working of it yourself?—*A.* No; I attended a co-operative credit society's meeting in August or September last and the movement was well talked of there and seemed to be very actively supported by the Burmese.

Q. In reply to Questions Nos. 91 and 92 on the subject of adulteration you do not think that any special action is necessary and there you speak of a new Anti-Adulteration Bill. Is it a local Bill for Burma?—*A.* It is not local.

(*Hon'ble Mr. H. Thompson.*—We passed a special Ghee Enactment the other day.)

Q. So far as food-stuffs and drugs are concerned you would support the Bill?—*A.* We have supported it.

Q. Do you think that anything is feasible in the matter of prohibiting the adulteration of articles of export?—*A.* Here they are not adulterated very much.

Q. Is it not a fact that the matter has been referred to the chambers of commerce and that the general opinion has been that it would not be practicable?—*A.* We say that it would not be needed for this province at all because there are very few things here that could be adulterated at the time of export.

Q. With reference to Government certificates of quality you do not think that they are necessary?—*A.* The trade here has adapted itself without that.

Q. That is in things like timber?—*A.* I cannot speak of timber, but of rice, beans, and produce generally. I do not know the custom in the timber trade.

Mr. C. E. Low.—*Q.* Is there no rice-milling association here?—*A.* No; at any rate not of European millers.

Sir F. H. Stewart.—*Q.* With regard to the registration of partnerships you say, "It is most desirable from every point of view, and quite practicable, that a system of registration and a disclosure of partnerships be introduced". Would there be any opposition from the Burmese so far as you know?—*A.* Probably some opposition, but there is the voluntary registration system already in force.

Q. Who register?—*A.* The native firms, and it is done voluntarily.

Q. Do they do so largely?—*A.* I think so.

(*Mr. Buchanan.*—These are more or less native bazaar piece-goods, etc., dealers that Mr. Anderson is speaking of.)

Q. Do they get any privileges for doing that?—*A.* Yes; the members of the Import Association will only give credit to firms so registered—to firms not registered the firms in the Import Association only sell on cash terms.

Q. It has been put to us that one of the principal difficulties in the registration of partnerships is the small trader?—*A.* That is a difficulty.

Q. Can you make any suggestion to overcome that? Would you exempt him from the provisions altogether, or would you apply them, for instance, to certain areas only?—

(*Mr. Buchanan.—A.* It can scarcely be limited to an area I think. I think that some system of leaving out the very small trade may be evolved.)

Q. You could not yourself make any definite suggestion?—*A.* It is a very difficult thing. *Hon'ble Mr. Anderson.*—I think it would come more or less voluntarily.

Q. Another difficulty which is raised is the Hindu joint family system.—*A.* That does not apply here.

Q. The third difficulty is with regard to single ventures, whether they should be included or not. A single venture may be a thing of considerable size and, therefore, it would be desirable that it should be included, and also it might develop into further ventures. Can you suggest any means of dealing with that? Do they have such ventures here as they do, we understand, in Bombay?—*A.* I do not think that that question would arise here at all.

Q. The gist of your knowledge on the subject is that it is very desirable that partnerships should be registered?—*A.* Yes; there must be some little opposition from the people who refuse to submit to anything but compulsion?

Q. You think that it should be made compulsory straight off?—*A.* Yes; we have not recommended that here, but we have recommended it to the Provincial Committee which went into the question of trade after the war.

Q. Have you got a Stock Exchange here?—*A.* There is an association of brokers which was started in the boom time. It still exists, but it is very small.

Q. If it were feasible to start a Stock Exchange in big centres, say, Bombay, Calcutta, Rangoon, and Madras, do you think it would tend to regularize and increase dealings?—*A.* No; I do not think it is a practical suggestion. I do not think it will have any effect at all here.

Q. As regards the compulsory registration of trade-marks that is a matter you have taken up once or twice?—*A.* Yes.

Q. You hold rather different opinions from some of the other chambers?

(*Mr. Buchanan—A.* I think the Bombay Chamber holds a rather different opinion from us.)

Q. Could you tell me what sections 51 and 57 of the Act are?—*A.* I could not tell you now offhand.

Q. With reference to apprentices you say, "In one of the oil companies better class apprentices are being experimentally trained for responsible and well-paid positions in the laboratories". What is that company?—*A.* The Burma Oil Company.

Q. Is there a regular system of indentures or something of that sort?—*A.* Yes; there is a system of indentures. These are better class boys and they are put on a special apprenticeship system. It is only experimental so far, but it seems to be promising quite well.

Q. Do you pay them?—*A.* Yes.

Q. How much?—*A.* I do not think it is very much to start with, but it may lead to good berths for them as chemists and so on.

Q. How long has this system been in existence?—*A.* Not very long.

Q. Who are these better class of apprentices? Burmese or Indians?—*A.* Burmese.

Q. Have they got any gift that way, or aptitude for chemistry?—*A.* I do not know that the average Burman has any particular gift in that line. In other lines he has natural gifts.

Q. What sort of pay do they rise to?—*A.* They start, I believe, on about Rs. 80 or Rs. 100, and may rise to Rs. 300 to Rs. 400 or more, according to qualifications.

Q. You suggest that further research should be made in connection with coal. Have not researches been made already fully?—*A.* I think they have been, but that is private enterprise, and I have not heard of any research made by Government.

Q. When you suggest that further research should be made you mean by Government?—*A.* Yes.

Sir D. J. Tata.—Q. You say in answer to Question No. 8, "There would also appear to be openings for sugar and pulp and paper factories and jute-growing and manufacture". Have you a suitable soil in Burma for jute-growing?—*Hon'ble Mr. Anderson.—A.* Samples of jute grown in some of the up-country districts were sent to the Bengal Chamber of Commerce who gave a very good report on them.

Q. It was thought that Bengal was the only place where you could grow jute?—*A.* This is quite recent. I believe there is a gentleman who is prepared to erect a jute mill but he is waiting normal times.

Q. In answer to Question No. 10 you say, "The existing banks, such as the Presidency, Exchange, and Joint Stock Banks, are quite sufficient to meet the demands put upon them". In India we have heard complaints that the Exchange, Joint Stock, and Presidency Banks did not give facilities to Indians readily, and that they more or less always financed European firms. As soon as I came here I made inquiries, and there was the same complaint that Indian firms could not get the same facilities as European firms. Is there any ground for complaint of that kind here?—*A.* The banks lend a great deal to Chetties and Shroffs and I think to Indian firms too.

Q. I was told yesterday that Indian firms which wanted to develop industries did not get the sort of support and encouragement that they should get?—*Mr. Buchanan.*—*A.* I do not really think there is anything in that.

Q. In Bengal, Madras, and Bombay, whenever we put this question to the Indians, as far as I remember, with one exception, they always said that they never got the same facilities as European firms.—*Sir F. H. Stewart.*—All the Indians did not give evidence to that effect.

Sir D. J. Tata.—*Q.* Do you think that there is occasion for any such complaint here also?—*Hon'ble Mr. Anderson.*—*A.* No; a man of standing would always find support.

Q. In answer to Questions No. 15 and 16 you say, "The development of the rubber industry also received great help by the exploitation of the Mergui Rubber Estates by Government". Will you tell us something about this exploitation?—*A.* Government started an experimental rubber station and when the people saw that rubber would grow they came along immediately and took up rubber-growing.

Q. And there is a certain amount of rubber-growing in that district?—*A.* Yes; it is a very large industry. Mr. Thompson had said that it was going to be a larger industry than the rice industry.

(*Hon'ble Mr. H. Thompson.*—I did not say that; I said it was going to be a big industry.)

Sir D. J. Tata.—*Q.* In answer to Question No. 18 you say, "If a Government-paid expert is loaned to a private business his report should be treated as confidential, otherwise there would be absolutely no demand for the services of a Government expert". Why do you say that?—*A.* I say that if the report is not to be treated as confidential there would be no demand.

Q. Would not firms be only too glad to get some assistance, rather than get none, even if the report were not to be treated as absolutely confidential?—*A.* My idea was that if the person had any good thing he would prefer to get his own man's report on the thing or wait till he could afford to get a man of his own, rather than give it into the hands of a person who would not keep it confidential.

Q. If the services of the Government expert are lent to any private firm is he not paid from the public revenues?—Yes.

Q. And would it not be rather unfair that any report that he might make should be kept entirely from the public?—*A.* A reasonable time-limit may be fixed during which it should be kept confidential—say, two years, or something of that sort.

Q. In answer to Questions Nos. 25, 26, and 27 you say that the surveys should be published and made available to the public. In what way? By publication in the newspapers, or by publication in the *Government Gazette*, or what?—*A.* By some such means, or by pamphlets or monographs. It will be known to the papers that it is published; it will be sent to the Chamber of Commerce, the Trades Association, or something of that sort.

Q. The local papers perhaps reach a larger public than the *Government Gazette*?—*A.* If it is notified in the local papers that such and such a survey has been held and the report on it is available you will find that people interested in it will go to it immediately.

Q. About the services of Government engineers being lent for buying machinery you think perhaps that it should not be done. But are there not some small Indian firms who would not know about these private engineering firms, and don't you think that a Government engineer would be of help to them in giving advice?—*A.* I think it is more likely that the man may know about private engineering firms who have travellers all over the country.

Q. You have private engineers who go all over the country?—*A.* Yes.

Q. You say, in answer to Question No. 33, that exhibitions should be popular in character. By that you mean that there should be side-shows, and they should be made a little attractive, *i.e.*, make the exhibition a sort of fair?—*A.* Yes; the Burmese are very fond of such sorts of things.

Q. In answer to Question No. 34 you say, "A radical alteration in the Consular Service would, to some extent, take the place of trade representatives abroad". What sort of alteration do you suggest?—*A.* To take a more active interest in publications and other things.

Q. Is it not true that at present Consuls are mostly concerned with dealing with sailors and merchant vessels, and that a great part of their time is taken up in that way?—*A.* I think they are mostly foreigners. Some of them are not really interested in British trade at all.

Q. You would divide the Consular staff into two sections, one of which would be concerned with looking after British subjects, especially sailors, most of the Consuls being in the ports; that work takes up a good deal of their time? Then you would have another section which would look after trade? Is that the idea?—*A.* Yes; the Consuls should have sufficient staff for both duties.

Q. In answer to Question No. 44 (*b*) you say, "In addition to this, a system of apprenticeship exists in most of the industries named, from which satisfactory results are obtained." Is there any definite system, or is it only just the ordinary way in which a

workman is trained ?—*A.* We have engineering works and for some years past we always have had a certain number of apprentices.

Q. Indentured ?—*A.* Yes; some of them do not stay long, but others do get on.

Q. There is a system of apprenticeship in the workshops ?—A. The Flotilla Company has also some.

Q. You say also, "In one of the oil companies better class apprentices are being experimentally trained for responsible and well-paid positions in the laboratories". They rise to Rs. 100, you said ?—*A.* They rise to more than that.

Mr. Buchanan.—They probably start on Rs. 80 to Rs. 100 and are trained for superior positions; they then might rise to about Rs. 250 to Rs. 300 or Rs. 300 to Rs. 400 or more, according to their qualifications. Advancement really depends upon the man's own ability and application. Having proved himself capable and industrious, he is practically on level terms with the European after his apprenticeship.)

Q. About the Government School of Engineering and Technical High School in Burma you say, "It is well attended and the boys who study there and complete their course by practical apprenticeship should certainly be more efficient than those who do not study". Do these boys find employment? Is there a large demand for boys turned out by this school ?—*A.* Yes.

Q. In answer to Question No. 48 you say, "Whatever the system adopted, practical apprenticeship should form a considerable part of it". Then you say, in answer to Question No. 44(*b*), that practical apprenticeship already exists. Do not those two statements appear rather contradictory ?—*A.* In answer to Question No. 44(*b*), we say it exists, and then, in answer to Question No. 48, which is, "On what lines should these two systems of training be developed and co-ordinated ?", we say, "Whatever the system adopted practical apprenticeship should form a considerable part of it". I do not see any contradiction.

Q. At the bottom of page 3 you speak of night-schools. Who are the people that take advantage of these night-shools ? Burmese ?—*A.* Indians.

Q. The Burmese do not go to these ?—*A.* No; they go to the higher classes—book-keeping and other things. We met one or two in the higher night-schools, and not in the elementary schools.

Q. The Burman has a natural aptitude for engineering and he wants to go in for it ?—*A.* Yes.

Q. I understood that the Burman was not a very energetic man, and that he would get somebody else to do the things for him, as far as possible.—*A. Hon'ble Mr. H. Thompson.*—It is quite a mistaken impression. They are very good engineers and make very good motor drivers.

Q. In answer to Question No. 64 you say, "For Burma we do not think that at present the formation of any new Imperial scientific and technical departments are necessary". Then, in answer to Question No. 112 (*a*), you say, "Many experiments have been made with a view to utilising it, but without success. This is perhaps a matter that a Government expert might take up". Practically, you admit that scientific and technical departments may be useful ?—*A.* But that would not make it necessary to have a scientific and technical department for Burma.

Q. But there may be several other questions of the same kind requiring solution ?—*A.* Personally, I do not think that the problems in Burma are sufficient to warrant such an establishment. They may go to India or Home.

Mr. A. Chatterton.—*Q.* I understand that you are in favour of the appointment of a Director of Industries in this province ?—*Hon'ble Mr. Anderson.*—*A.* Yes.

Q. And your main idea is that he should deal with the smaller industries, the cottage industries, in this province ?—*A.* To begin with, at any rate.

Mr. Buchanan.—Our idea is that the matter of cottage industries is one which should be taken up in earnest by Government here and a thorough investigation made into the subject. At present, they are in a backward state. The people are poor and ignorant and their methods are crude, and they require help in these, as also in the marketing of products. I am particularly referring just now to cotton-and silk-weaving.)

Q. Would the people be amenable to instruction ? Would they be willing to take up improvements in their methods of working at the present time ?—*A.* I should imagine they would if you pointed out the thing and explained it to them. They may not take to it at once. I am talking of Burmese principally.

Q. Something in this direction appears to have been done at Amarapura. Has that spread outside Amarapura itself ?—*A.* It has, round about the Mandalay district.

Q. You have no personal knowledge about the extension of the influence of a school of this kind ?—*A.* We only know that it has been of very considerable value to the industry in Amarapura.

Q. In what way has it made its effect apparent ?—*A.* I think the outturn has improved considerably; the manufacture has improved, and it is quite apparent both in style and texture.

Q. Is that inside or outside the school ? Have the weavers who have been taught in the school set up the improved types of looms in their own houses and worked them ?—*A.* I suppose they do. I have no personal knowledge.

Q. What I wanted to know was whether you personally, or as members of the chamber, have any knowledge of what is going on in this connexion.—*Hon'ble Mr. Anderson.*—*A.* We have had no personal knowledge.

Q. Besides these cottage industries what position should the Director of Industries occupy in relation to Government? Do you want him to be the channel through which the chambers of commerce and other bodies should make their representations to Government?—*A.* He will represent to Government after inquiring on the representation of other bodies what has got to be done.

Q. It was not clear to me from the answers that you gave whether you desire the Director of Industries to be assisted by a board or not. —*A.* Assisted by an advisory board.

Q. What would be the composition of this advisory board in Rangoon?—*A.* Merchants and people who are interested in the lines that are going to be taken up.

Q. Would you prefer to have a board of two or three men, a small board, or a comparatively large advisory board?—*A.* A small board, which can always get information through the chamber and other bodies.

Q. The idea is that this board should meet at frequent intervals and give, in an advisory capacity, advice on the schemes going on in the director's office?—*A.* Yes.

Q. This would involve a considerable amount of work to the members of the advisory board. Would you pay them?—*A.* I do not think so. The director would do all the current work, and the advisory board would advise him on what lines he would develop the industries.

Q. Would not that involve a considerable amount of work on their part?—*A.* I do not think so.

Q. Do you think that you will get first-class men on the board?—*A.* I think so.

Q. How will a composite board of this kind deal with cottage industries? Where will you get men who can really advise in these matters?—*A.* I think the director would be the head of it and there are people interested in up-country trade who have their houses up-country You can get men from among them.

Q. Is there any export from Burma of the products of cottage industries?—*A. Mr. Buchanan.*—A. Nothing practically.

Q. Are they simply consumed locally?—*Hon'ble Mr. Anderson.*—*A.* Some of them come down to Rangoon. If you go and see the Rangoon bazaar you will find the products of up-country. You will see lacquer work, cane work, pottery work.

Q. In answer to Question No. 3 you say that the rice-milling industry is very much overdone. Whom do the majority of these mills belong to?—*A.* The larger mills to Europeans and the smaller ones to Burmese and natives.

Q. How did it come to pass that the supply of mills is so much in excess of the demand for them?—*A.* Mr. Thompson in his report said that it is due to the speculative element that exists in the rice trade. If a Burman gets a certain amount of money he must start a rice mill.

Q. Is that due to the fact that there is a very limited knowledge of the ways in which money can be employed in industries with the result that everyone wants to imitate a successful venture?—*A.* As soon as a Burman has made some money he wants to set up a rice mill.

Q. The mills which you speak of in Moulmein—are they small mills?—*A.* Some of them are, and some are not. I have got some figures and, if you like, I shall show them. (The witness handed over a tabulated statement.)

Q. Where do they get their fuel supply?—*A.* They use paddy husk.

Q. For instance, take the Electric Supply Company. Where do they get fuel?—*A.* They use coal.

Q. Where do they get it from?—*A.* From Calcutta.

Q. What is the price of coal?—*A.* It was about Rs. 16, but now it is Rs. 41 or something like that.

Q. In the rice mills there is a very large surplus of paddy husk. What is done with it?—*A.* It is thrown into the river.

Q. Would it be practicable to use that husk for generating steam for other mechanical plant besides rice mills?—*A.* It is too bulky to move.

Q. Would it not pay with coal at Rs. 41?—*A.* I think it might, possibly with some people, but, generally speaking, it would not pay to cart it. It is too bulky to move.

Q. In connexion with this statement have new rice mills been put up, or is the matter gradually righting itself with regard to competition?—*A.* No new large mill has been put up for some years. A number of small mills has been put up in the districts because it is always the Burman's idea to have a rice mill.

Q. In reply to Question No. 8 you say, "What has been done with wheat in India can be done, and done ten times over, in the case of paddy". What is it that you want to be done?—*A.* Improve the methods of agriculture, and, more particularly, the quality of the grain.

Q. Have you got anything more definite than that?—*A.* When I was in Mandalay the Deputy Director of Agriculture told me that the Burmans, when transplanting, planted five seedlings together, whereas he had proved by experiment that actually a better result was obtained by transplanting the seedlings separately, thus using only one seedling instead of five. He told me that the Burmans round about the farm were beginning to adopt this practice. It is only comparatively quite recently that the experimental farm had started doing anything in this direction, and everything that they are doing is turning out successfully.

Q. You want improved methods of cultivation and improved seeds?—*A.* Yes.

Q. As regards irrigation is there any difficulty at all in Burma?—*A.* I do not know about that. I believe not. I cannot pretend to speak on that.

Q. In answer to Question No. 27 (*b*) you say that Government engineers should not be allowed to undertake the purchase of machinery and plant for private firms. Are there any private consulting engineers in Rangoon?—*A.* Yes.

Q. Supposing there is a Burman who wants assistance in putting up a rice mill?—*A.* There are people who import machinery from Home or manufacture it here, and they have consulting engineers.

Q. They are manufacturing firms?—*A.* Yes.

Q. Are there people who are not connected with manufacturing interests who are prepared to give disinterested advice?—*A.* There are people who are quite prepared to put up machinery and show how it is to be run. We have put up very many rice mills. We give guarantees and there is no trouble about that.

Q. You are prepared as consulting engineers to give guarantees regarding the work generally?—*A.* Yes; we are prepared to give the man what he wants and guarantee it.

Q. With reference to your answers to Questions Nos. 54 and 55, relating to the employment of engineers, do you agree that it is desirable to have this examination for men in charge of boilers and prime-movers uniform, or would you be rather free from restriction in employing them?—*A.* We would rather be free from restriction, but I do not think there is any hardship entailed by it. Naturally we do not like to be restricted. We have a superintending engineer—a qualified engineer—who is in charge of things.

Q. Do you think there is any advantage gained by these certificates?—*A.* For small mills, yes. It does not affect Europeans because they have a proper staff.

Q. What is the advantage accruing to the small mill except that the manager has to pay double wages to the driver who has got a certificate?—*A.* It will be in more qualified hands.

Q. Are there any Burmese with these boiler certificates?—*A.* I cannot say. I think there are a good number. We have one or two Burmese men.

Q. What do you pay them?—*A.* If the man has got a certificate he gets Rs. 250.

Q. But if he has not got a ticket?—*A.* He is much lower down the scale. Any man who can be in charge of our boiler will start on Rs. 250.

Q. How many classes of certificates have you got?—*A.* There are only two.

Q. The small native mill up-country—could it afford to pay Rs. 250 to a man in charge of the boiler?—*A.* I cannot tell you.

Q. Do they employ certificated men?—*A.* They must. I am not exactly aware of the terms of the Boiler Act, but I think they must have a certificated man.

Mr. C. E. Low.—*Q.* I would like to take up the last question that Mr. Chatterton put to you. You say, in answer to Question No. 54, that a ticket granted in one province in India holds good in any other and, possibly, that impression—which is quite wrong—may have affected your answers to some extent. There are numerous provinces which do not recognize one another's certificates or there is a difficulty about it. Do you recognize the certificates of other provinces of India in Burma? *Hon'ble Mr. Anderson.*—*A.* I think no. I am not sure.

Q. I should like to clear up that impression on your part?—*A.* I think we do.

(*Mr. Buchanan.* I remember making inquiries the other day and I was informed that they do recognize them.)

Q. Here you recognize the certificates of other provinces?—*A.* Yes; I understand so.

Q. Of course, in certain provinces they do not have such certificates at all—in Bengal for one and I think in Madras also. In India there are three classes of certificates. The third-class man is usually a man who is in charge of small installations of 30-or 40-h. p., and probably gets about Rs. 50 or 60?—*Hon'ble Mr. Anderson.*—*A.* He is called a driver. These are the men who are in charge of our launches.

Q. Turning to your answer to Question No. 2 (*a*) about banks you are not in favour of restricting the use of the word 'bank' or 'banking'? You say that recent legislation has, however, placed restrictions on such institutions. You are, no doubt, alluding to the Companies Act and its audit provisions especially. You do not suggest any further legislation—you said so in answer to the President—in respect of banking?—*A.* We have been advised not.

Q. You are not in favour of any restriction on the use of the word 'bank' or 'banking'?—*Mr. Buchanan.*—*A.* In what respect?

Q. It had been suggested in many places, long before the Commission started, that no man should use the word 'bank', or 'banking', or 'banker' unless he had the concern registered as a limited company and submitted also to certain further restrictions in respect of publicity and so on?—*A.* The question has not arisen here.

Q. Are you in favour of making it compulsory on a person who starts a bank to put in a deposit like the insurance companies have to, or to have a certain amount of paid-up capital or something of that sort?—*A.* I regret we have hardly considered these questions.

Q. In your answer to Question No. 3 you say that there are more mills than paddy to go round. We were confronted by the same position in reference to cotton gins in the Punjab and small rice mills in Madras. In the Punjab a number of people pressed very strongly that the number of gins should be limited according to the cotton crop. Would you agree with that suggestion?—*A.* No; either the excess mills will shut down, or people will adapt themselves and increase the production of paddy by improved agriculture. That is the biggest thing in Burma. The thing will right itself.

Q. Is there any difficulty about the amount of manure available for the paddy?—*A.* There is very little manuring. I was told in Mandalay that the best manure was burnt paddy husk—ashes.

Q. You say that exemption from taxes as a means of aiding a new industry appeals to you most. Do you allude particularly to income-tax or octroi and other taxes?—*A.* Income-tax is practically the only tax. We have got no octroi.

Q. The more profit a company makes the more income-tax it pays and the less profit it makes the less income-tax it pays and, therefore, remission of income-tax does not aid a new concern much—it is not a very substantial form of aid?—*A.* There is a very high income-tax.

Q. Those persons that are paying very high income-tax are, presumably, making substantial profits?—*A.* You know it has occurred in connexion with the rubber estates which have come into bearing.

Q. Do you mean the excess profits tax at Home?—*A.* Yes.

Q. That is another matter. You say that no difficulty is found in getting money for new industrial concerns, speaking, of course, in the general way. What do you think of the idea, for instance, of a central sugar factory, with a sugar-growing estate. Does that not appeal to the enterprising commercial public here?—*A.* It will appeal.

Q. Why do you think it has not been done so far?—*A.* They have not produced raw sugar in the country up to date.

(*Mr. Buchanan.*—That is one of the lines on which we would like a pioneer factory, first and foremost in sugar.)

Q. You would like Government to demonstrate that it is commercially practicable? That would have a good effect? Have you followed the Assam experiments? Do you think that if action of that kind had been taken by Government in the past it would have enlisted the support of the public?—*A.* Yes.

Q. You think that money would have been forthcoming?—*A.* Yes; take rubber estates. It was pioneering.

Q. That was purely agricultural. I am asking about agriculture and industry combined together. Government has been ready to take up an agricultural proposition hitherto, but it has been shy of industrial propositions?—*A.* They have started the growing of rubber.

Q. Take, for instance, another matter. It is in the interests of national security that we should be, as far as possible, able to manufacture our rubber. Why has rubber manufacture not appealed to the commercial public hitherto?—*Mr. Buchanan.*—*A.* The industry is probably too young, and it depends if enough rubber be forthcoming.

Q. Do you think that rubber will be forthcoming?—*A.* I should think there is a prospect of it.

Q. My point is this:—Have not the public been rather inclined to go on certain existing lines and shut their eyes to new possibilities, and are there any ways in which Government could help them to strike out any fresh lines?—*Hon'ble Mr. Anderson.*—*A.* That is one thing that a Government expert may give advice on.

Q. How do you think that Government could assist in a matter of that sort?—*A.* By an expert adviser studying the conditions.

Q. Everybody knows the conditions under which rubber is manufactured.—*A.* In other industries, like the Burma Oil Company, they manufacture the whole of their products and, probably, when the industry here gets sufficiently big, that will be done. I do not know why it has not been started in places where there is a large quantity of rubber.

Q. In the loan of the services of a Government expert there is one difficulty which has not been touch so far. Supposing I am a Government expert and I am lent to you and I work out a certain line and am in possession of some results which I am supposed to keep confidential and your friend also applies to the department under which I am working and asks for my services to work out the same subject what am I to do? Should I pretend to go through the whole thing over again, or might I utilize the results previously obtained?—*A.* I do not think it should be published if I had applied first. I would like to go to somebody who would not give out the results. That is why we say that if the report of the

expert lent to a private business is to be published there would be no demand for his services.

Q. Have you any experience up to date of any business with the Indian Trade Commissioner in London?—*A.* I have referred our people at Home to him.

Q. He has been working for the last three or four months?—*A.* I have already had two or three things from him and I think he will be a very useful man.

Q. The conditions in which he is now working are purely war conditions?—*A.* Yes.

Q. Have you any views on the subject of the appointment of British Trade Commissioners in Bombay and Calcutta, on the understanding that the other British Trade Commissioners all over the Empire will be at the disposal of people here?—*A.* We think it would help to bring trade much more together.

Q. Do you think it will be useful to India?—*A.* I think so.

Q. With reference to your answer to Question No. 38 it has been suggested to us that one way of dealing with the stores difficulty might be to continue, after the war, on the present lines of working of the Indian Munitions Board by which all Government indents would go through the local and Imperial Departments of Industries who would take care that everything that could be made in the country was obtained here—exactly what the Munitions Board is now doing on priority certificates. What do you think of the idea?—*A.* That would be very useful to firms out here.

Q. You think that it would be of assistance to manufacturers here?—*A.* Yes; especially to engineering.

Q. With reference to apprentices do you think that it is desirable to give a statutory basis to apprenticeship by which a man who employs an apprentice during the period of his indenture with another would be liable to fine on summary conviction? It has been put to us that the apprenticeship system is a farce because, as soon as a boy learns something, somebody else pays him a trifle more than the original master and trainer and he, therefore, never learns his job completely. It has been suggested to us that there should be a legal basis to the apprenticeship system by which, if an apprentice leaves the man to whom he was indentured before his time is up, then the other person who employs that apprentice will be liable to fine.—*A.* I do not think that any necessity for that has arisen. I would be against that.

Q. There is not much tempting away of apprentices here?—*A.* No; as a rule we take apprentices more as a matter of grace than otherwise.

Q. They do not become so markedly skilled during the period of their apprenticeship that there is a serious competition for their services?—*A.* No.

Q. Not even from the bazaar?—*A.* No.

Q. Are you in favour of the idea, which has been suggested in another place, that large railway or engineering workshops should, with Government assistance if necessary, have classes for training apprentices attached to them, the apprentices or pupils getting their practical training in the shops under shop conditions, and getting their theoretical training in these classes?—*A.* If the works were big enough I should think it would be a good thing.

Q. Do your railway workshops do that?—*A.* I cannot say. In the Government School here they have classes and, after six months or a year, the pupils have to go out as apprentices for a time, as part of their training course, but, if you had shops which were big enough, they could do the theoretical and practical simultaneously.

Q. You have presumably a fairly large railway shop?—*A.* Yes.

Q. You say that it is a very valuable training-ground?—*A.* If the works are large enough.

Q. With reference to the collection of statistics what particular figures are you speaking of in your answer to Question No. 82?—*A.* Movements of paddy, rice, and that sort of thing—crop reports all over the world.

Q. Prior to the restriction on the publication of sea customs figures, owing to the war, was the system here satisfactory?—*A.* Yes.

Q. Did you get weekly figures?—*A.* Yes; in fact daily figures.

Q. Are they published by the Customs Department or the chamber?—*A.* By the Customs Department.

Q. Is the paddy forecast nearly correct?—*A.* It is marvellously correct. I have compared it with the Bengal crop reports. For many years it has been very correct.

Q. What do you think its correctness is due to?—*A.* The success is due to the District Officers.

(*Hon. Mr. Thompson.*—I should attribute it to the correct surveys.)

Q. There are surveys of areas under crop in most provinces in India. How far do you rely on the trade up-country for their information?—*A.* There is no trade up-country. They are cultivators. The whole of these cultivating districts lives by paddy, and paddy alone.

Q. The forecasts are so correct that one would like to know, if possible, what the reason for this unusual accuracy is.—*Hon. Mr. Thompson.*—*A.* The forecast is not the result of a mere mechanical process, but of intelligent observations and surveys.

Q. With reference to your remarks about the absence of adulteration is Cutch exported from here?—*A.* It is a small thing.

Q. Is it not adulterated ?—*A.* At one time it was, but that has been stopped. There was a great shortage of Cutch at one time and it was adulterated. They have now got the position well in hand.

Q. Are there many firms exporting it?—*A.* Half a dozen probably.

Q. Where does it go mostly ?—*A.* London and Liverpool.

Q. One witness whose evidence we have read has stated that Cutch is heavily adulterated ? —*A.* The chamber took up the case and represented it to the Forest Department who were asked to stop the adulteration and it has done so to a certain extent.

Q. Is there any export of groundnuts from here ?—*A.* Yes.

Q. Any trouble about adulteration of groundnuts ?—*A.* Not particularly I should say.

Q. It has been said that machine-shelled groundnuts which are superior are mixed with hand-shelled groundnuts which are bad. Is it. so ?—*A.* I do not think there has been any particular trouble, nothing of any importance.

Q. In answer to Question No. 94 you say, "British trade interests in India require some system of compulsory registration of trade-marks in India based on that obtaining in England". Supposing one man has a trade-mark in India, and another man has the same trade-mark in England, which is a common state of affairs I understand, how would you deal with that ? —*A.* I do not know how this Act applies.

(*Mr. C. E. Low.*—There is a considerable body of opinion among the Chambers of Commerce in India the other way ; in fact, perhaps the majority of opinions is against your proposal.)

(*Sir F. H. Stewart.*—It is a question which the Burma Chamber of Commerce has taken up.)

Mr. C. E. Low.—*Q.* They, presumably, have excellent reasons for doing so ?—*A.* More detailed information will be found in the report of the provincial committee on problems after the war.

Q. The only way of registering trade-marks at present is to register the trade-mark as a miscellaneous document in proof (within certain limits) of priority.—*Mr. Buchanan.*—*A.* It is of no practical use at all, as it is at Home. At Home trade-marks are open to inspection. If you want to register a trade-mark you go to the registration office and look through all the books.

Q. Before you get to that position you have got to register every trade-mark in the country and the title thereto has to be proved if it is impugned. You will require a sort of doomsday book of trade-marks or a record-of-rights for the whole of India ? —*A.* It is a very big question. What has happened has happened and we could not very well go back to the beginning and make everyone prove his existing right ; could we not start from now ? Unless a mark were affected by the rights of a prior user that would serve our purpose here. Possibly, you may have a certain mark on one class of goods and I may use it on another. It may also happen that both use it on the same class of goods but in different grades in that class and it is very confusing.

Sir F. H. Stewart.—*Q.* Do you not usually come to an amicable agreement about that with the other people?—*A.* I believe so, in most cases.

Mr. C. E. Low.—*Q.* With reference to the salt industry, which you speak of in answer to Question No. 111, what is the position of the manufacturer of salt in Burma at present ? I understand that they do not pay duty on salt, but so much on each salt refinery.—*A.* I do not know.

Hon'ble Mr. H. Thompson.—*Q.* Is it not possible that one reason for this overabundance of mills that is described by the chamber is the fact that some years ago rice milling was very largely seasonal and now it is carried on throughout almost the whole year ? Where you have a seasonal trade you must have more mills. Is that not the real explanation of the overabundance of mills ?—*A.* It has some bearing, but not the main bearing.

Mr. C. E. Low.—*Q.* How is it that the season has spread out, or ceased to be entirely seasonal ?—*A.* The Burmese hold up the crop. There are now more godowns up-country than there used to be.

Hon'ble Sir R. N. Mookerjee.—*Q.* If Government is satisfied with the success of a pioneer factory have you thought over the matter as to how to hand it over to a private firm or person ?—*A.* The Mergui Factory was put up to tender by Government. Government need not accept the highest tender provided a respectable person tendered for it—somebody capable of carrying it on—that is all Government would look to.

Sir F. H. Stewart.—*Q.* With reference to your answer to Question No. 105, about the Forest Department, that represents the general idea of your chamber ?—*Hon. Mr. Anderson* —*A.* Yes ; it is their note.

Q. Similarly, would the same answer apply to engineering problems ?—*A.* Yes.

Q. Are there any engineers attached to the Forest Department ?—*A.* No.

Q. You think it would be a good thing if they were ? They might help to solve questions of transport ?—*A.* I think there are Forest Officers who have such knowledge. You have one witness coming from the Forest Department.

Q. Your remedy for the want of help to deal with commercial problems is to have a separate cadre ?—*A.* Yes.

Q. Would that work ? Would it give a sufficient opening for good business men ? The alternative that has been suggested to us is this :—to select certain Forest Officers and give them a certain amount of business training.—*A.* It requires the consideration of people who have first-hand knowledge in the matter. I have not. This note was put up by people interested in forests.

Q. You are the President of the Chamber of Commerce here ? What is the system of electing your members ?—*A.* By firms.

Q. How many members have you ?—*A.* About 78.

A. Have you any Indian or Burmese firms ?—*A.* Indian firms and Chinese firms.

Q. Is there much Chinese labour in Burma ?—*A.* In some districts there is some Chinese labour.

Q. Is it increasing ?—*Mr. Buchanan.*—*A.* It was not very satisfactory to start with. We look more to India for a satisfactory solution of labour problems here. I should like also to emphasize the desirability of establishing pioneer factories in connexion with new industries holding out reasonable hope of commercial success, *e. g.*, sugar, jute, rubber manufacture; and demonstration factories, where considered advisable, for the improvement of methods in existing industries, *e. g.*, pottery and porcelain, soap-making, and also for a closer investigation into the position of the cottage industries, silk, and cotton-weaving, etc.

Q. I wish to know, on the question of disposing of pioneer factories, whether you would put these pioneer factories to auction, or whether it would be better to associate some business firms in their management from the start and then dispose of the factories to them ?—*A.* I rather think that this would give the particular firm a preference, and the other way would be better.

Q. You would not be any better off though if the factory got into the hands of people who could not run it ?—*A.* Government need not accept the highest tender. Government must take care of it. The best plan would be to put it to tender.

WITNESS NO. 415. *Hon'ble Maung Po Tha.*

HON'BLE MAUNG PO THA, *Member, Burma Legislative Council, and Head Broker, Messrs. Steel Brothers, Rangoon.*

WRITTEN EVIDENCE.

I.—Financial Aid to Industrial Enterprises.

Q. 1.—There are no Burman capitalists to speak of and the various Burmese industries are being run on a small scale with the respective proprietor's own or borrowed small capital. A combination between these small proprietors is not possible owing to their mistrust of one another and, so long as this mutual mistrust exists the development of any Burmese industry on a bigger scale is out of the question. To remove the mistrust Government aid and control, preferably through the Registrar of Co-operative Credit Societies, will be necessary for a time. Capital.

Q. 2.—Chetties and other unscrupulous money-lenders whose rates of interest are exorbitant.

Q. 2 (*a*).—The banks in Burma are European concerns and these will never think of financing any native industry. If Burmese industries are to be developed as they ought to be, under the aid and control of Government, the Government Treasury should be the source from which the initial capital may be drawn. When the industries have been placed on a firm footing the Upper Burma Co-operative Bank and other co-operative Burmese banks should open industrial banking branches to finance them or act as their bankers.

Q. 4.—There is no Government aided industry so far as Burmese industries are concerned. Government Assistance.

Q. 5.—For hand industries without machinery Government loans without interest and guaranteed dividends for a limited period will be a great boon. In others with machinery the supply of machinery and plant on the hire-purchase system, with provision of part of share capital on the same basis as public subscriptions of capital, will, be sure of success.

Q. 6.—In all methods of Government assistance there should be a Government director and auditor until industries are on a firm basis.

Pioneer factories.

Q. 7.—Though I have no experience of Government pioneer factories I am in favour of them and, so far as I know, there have been no such factories in Burma. The policy of having Government pioneer factories for working chrome leather and aluminium prevails at Madras, and it should be followed with advantage in Burma. Capital and skilled labour are required, and the promotion of local industries should be linked on to the co-operative movement.

Q. 8.—It would be a great boon to Burmans if Government pioneer industries are started and handed over to Burmese companies as soon as they are on a sound footing.

No such industries ought to be converted into Government enterprises. Such a benevolent act on the part of Government will go a long way towards fostering the imperial idea and feelings of loyalty among Burmans.

Co-operative Societies.

Q. 11.—Yes; Amarapura weaving industries. The exact means adopted and the results obtained are known to the Registrar of Co-operative Credit Societies.

Q. 12.—All Burmese industries in which co-operation is required.

The organization and special objects of each society will depend on the nature of industry for which it is established.

Limits of Government assistance.

Q. 13.—There are no private Burmese enterprises, nor will there be any such new enterprises with which Government aid would compete.

Q. 14.—There need not be any limitations on Government aid to a new enterprise to avoid competing with an established external trade the interests of which will, no doubt, be looked after by the Government of the country concerned.

II.—Technical Aid to Industries.

Q. 15.—I believe that the technical and scientific aid provided by Government in agriculture is proving to be a boon to agriculturists in Burma. What is urgently required in Burma is agricultural schools at different centres, with an agricultural college at Rangoon.

Q. 16.—I believe some researches made by the Agricultural Department are proving a benefit to agriculturists in Burma.

Q. 17.—For a time the loan of Government experts to Burmese private firms and other enterprises should be made free of any charge by way of encouragement.

Q. 18.—No hard-and-fast rule need be laid down. Each case of research may be decided on its own merits.

Demonstration factories.

Q. 19.—Demonstration factories may be adopted for the following industries on the lines of pioneer factories :—

(1) weaving,
(2) sugar,
(3) oil pressing and refining,
(4) pottery,
(5) dried fish and *ngapi*, and
(6) salt.

Special attention should be given to the manufacture of cloth, sugar, and oil for domestic consumption. The Burman, male and female, should be dressed from head to foot with articles manufactured in this country. Their articles of food should also be manufactured locally. If this is effected large sums of money now spent on foreign imports will be saved.

Research abroad.

Q. 22.—Provision for research in special subjects in the United Kingdom might be advantageous in attracting enterprising capitalists there.

Research in India.

Q. 24.—There may be an Advisory Council in Burma, as in the United Kingdom, for referring research problems to colleges and other appropriate institutions in India.

An industrial or technological research institute should be attached to the projected Burma University.

The manufacture of paper, soap, and dyes should be first considered.

Q. 25.—There should be a technical institute for Burma, and the Government Departments of Geology, Forest, Agriculture, etc., should send to this institute specimens of economic interest for investigation as to their utility for any particular purpose. No separate survey need be organized and the existing establishment of the Chemical Examiner, with such additional staff as may be necessary, should form the working and research staff of the technical institute, in addition to what they at present do.

Q. 27.—A commercial museum should be attached to the technical institute for exhibiting the results of research.

Q. 27.—(*a*) No such consulting engineers in Burma. Consulting Engineers.

(*b*) The services of Government consulting engineers, if any, may be given free of charge.

III.—Assistance in marketing products.

Q. 29.—Please see question 27. At present there is no commercial museum in Burma. When the one to be attached to the Technical Institute at Rangoon has fully developed, branch commercial museums should be opened at different trade centres. Commercial Museums.

Q. 30.—In my opinion there should be co-operative sales agencies for the sale as well as the display of the products of minor and unorganized cottage industries. Sales agencies.

Q. 30.—(*a*) Travelling exhibitions of industries would not only be instructive but would also lead to multiplication of such industries and new demands for their products. Exhibitions.

Q. 31.—The value of industrial exhibitions is inestimable and there should be such exhibitions every year at Rangoon and Mandalay.

Q. 32.—Yes. Government should hold such exhibitions as in the past and offer prizes.

Q. 33.—Exhibitions should be such that they will not only bring buyers and sellers in contact but they will also be instructive and popular in character.

Q. 34.—Burman trade representatives in Great Britain and other foreign countries may lead to Burman traders becoming direct importers and exporters. Such representatives should be qualified in the Burma trade and their duties should be to promote the interests of the Burmese trade. Trade Representatives.

Q. 35.—Commissions for special enquiries are costly without corresponding benefits and their recommendations will not as a rule satisfy all concerned.

Q 36.—So far as Burma is concerned no trade representative in other provinces of India is necessary.

Q. 37.—Government departments which use imported articles should publish not only a list of these articles but should also exhibit them in commercial museums. Government patronage.

Q. 38.—No change to propose in rules for purchase of stores.

Q. 40.—Government forest products may be supplied to such Burmese industries as require them at their actual cost. Supply of raw materials.

Q. 41.—The Government policy of letting land on a term of lease is unpopular and land required for industrial purposes should be granted in perpetuity and free of land revenue for at least ten years, and at the end of this term the rate of land revenue assessed should not exceed rupees three per acre a year. Land policy.

Q. 34.—(*a*) By sinking artesian wells with pipe lines or by irrigation from adjoining river, etc. Supply of water.

V.—Training of labour and supervision.

Q. 44.—(*a*) Most Burmans who cannot afford English education have Burmese primary education in Phongyi Kyoungs and other Burmese Lay Schools. English primary education would no doubt broaden their mind and idea which would make them more fit for industrial employment. Lack of primary education.

(*b*) Training from boyhood in industries would improve the labourers' efficiency and skill. Boys of 10 or 12 years of age should be employed as apprentices on suitable allowances in factories to make them efficient and skilful labourers later. Apprenticeship system.

Q. 45.—During their apprenticeship, elementary and technical instruction relating to the industries in which they are employed may be given by the employers. Their standard of living should be kept at the proper level by a sufficient rate of pay, good housing and agreeable recreation.

Q. 50.—Such schools may be under the joint control of both the Departments of Education and Industries, by an arrangement to be settled by these departments. Control of technical education.

Q. 51.—By establishing high technical schools.

Q. 53.—Technical experts where required may be trained at the cost of the industries concerned. Training of Supervisors.

VI.—General official administration and organization.

Q. 56.—Except the Co-operative and Agricultural Departments the duties of which are to develop co-operation and agriculture, there is no organization in Burma for the general development of industries. Existing organization.

Qs. 57—61.—In Burma the Burmans are only in need of encouragement and pecuniary assistance, as they have not, like other nations, the necessary capital and combination at their back, *vide* question 1. Director and Board of Industries.

In my opinion a Director of Industries should be appointed for Burma with an Advisory Board of Burmans before which all questions of industries and their encouragement should be placed for consideration. The Director's action should be guided by the advice of the Board generally, but if he disagrees with the advice of the Board in any particular matter he should refer the fact to the Local Government for orders.

Q. 62.—There is already the Imperial Department of Commerce and Industry to correlate the separate activities of various provinces in industries and no other machinery is required for the purpose.

Q. 62.—(*a*) The Director of Industries should work in conjunction with the Registrar of Co-operative Societies for assisting cottage industries.

VII.—Organization of Technical and Scientific Departments of Government.

Q. 63.—I think the Forest, Agricultural, and Chemical Examiner's Departments can give certain assistance to industries.

The Local Government is in a better position to recommend what changes should be made.

Imperial Department.

Q. 64.—A new Imperial Scientific and Technical Department may be advantageous to the development of industries but for what subjects or natural group of subjects it should be created I cannot state. It is for scientific and technical officers to recommend.

Qs. 65—70.—These are for Government to decide.

Q. 71.—No technological institutions in Burma.

Technological Institutions.

Q. 71*a*.—I think each province should have a technological institute to develop as an independent unit.

Q. 72.—Each institute should deal with a limited group of related subjects.

Q. 73.—Each institute should be open to Government inspection.

Q. 74.—Yes; but it is for Government to arrange for co-ordination and prevention of overlapping.

College of Commerce.

Q. 80.—A College of Commerce in Burma will no doubt be a boon to the province. Its organization is a matter for Government to decide after consultation with experts.

Q. 81.—Such a college will produce men qualified in commerce and their activities in export commerce will be a great stimulus to the industrial development, and their advice to men engaged in industries will be useful.

Local bodies.

Q. 81.—(*a*) By affording such facilities as are in their power the municipalities and local boards can assist in promoting industrial and commercial development.

VIII.—Government organization for the collection and distribution of commercial intelligence.

Trade Journals.

Q. 84.—I do not read the *Indian Trade Journal*. It must be useful to men engaged in trade.

Q. 85.—It will be a boon if Government will establish a general industrial and commercial journal for free distribution to persons actively engaged in industries.

Q. 86.—By distributing the general industrial and commercial journal in English and Burmese. It need not be translated in other vernaculars.

Other publications.

Q. 87.—Special monographs on industrial subjects or publications like those of the Forest and Geological Departments will no doubt be instructive. I have no personal knowledge of the advantages that may have followed the issue of such special monographs and I can therefore offer no advice.

IX.—Other forms of Government action and organization.

Certificates of quality.

Q. 89.—The time for a system of Government certificates of quality of products may come later so far as Burma is concerned. At present such a system is unnecessary.

Q. 90.—A Burmese committee may be appointed to test each class of products and grant certificates when the time comes.

Adulteration.

Q. 91.—Penalties should, I think, be imposed for adulterating all cooking oils and ghee.

Q. 92.—A Committee might do.

Trade Marks.

Q. 94.—The present Indian Law regarding trade marks and trade names seems good.

Registration of Partnerships.

Q. 96.—I do not think such a system is necessary.

Transport facilities.

Q. 97.—There is already a local committee to advise on the subject.

Q. 98.—The present rates of railway freight are high. It will be a boon if they can be reduced in favour of industrial products.

Q. 99.—Yes. For details the existing local Committee on the subject will furnish.

Q. 101.—Both the external trade and internal industries are handicapped owing to want of more roads and high rates of shipping freights.

Hydro-electric power.

Q. 102.—I do not think anything has been done to ascertain the possibilities of developing hydro-electric power.

Mining.

Q. 103.—Mining and prospecting rules are rather strict.

Q. 104.—Yes, wolfram.

Forests.

Q. 105.—Forest Rules are rather strict and a relaxation will be a boon to the people of the country.

Q. 106.—By the Forest Department collecting and transporting them to different trade centres and selling them at cost value.

Q. 107.—This question is for the Forest Department to answer in detail.

Q. 108.—Roads are the deficiencies in the Forest Transport and the Local Committee who have gone into the matter will make suggestions.

Q. 109.—No jail industries are instructive to convicts most of whom become good workmen after release. Jail Industries.

X.—General.

Q. 110.—Roads to the wolfram mines in the Thaton district are badly needed.

Q. 111.—Yes. The manufacture of rubber tyres of all kinds and all classes of rubber articles that are imported. New industries.

Q. 112.—There is an abundant supply of wood of various kinds which are used for making boxes for packing rubber but this trade has declined owing to the Japanese competition.

Q. 112.—(*c*) I do not think any Burmese industry in Burma is dependent on the importation of raw material, etc., from abroad.

ORAL EVIDENCE, 22ND JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* Do you deal largely in rice?—*A.* Yes, rice and paddy.

Q. How do you finance your business?—*A.* We borrow from the Chetties.

Q. Don't you get any help from the European banks here?—*A.* I get help very seldom and very little.

Q. Did you try?—*A.* Yes, I have tried.

Q. In which way? Were you willing to give any security just as other European merchants do?—*A.* If I give security for about two lakhs I get about one lakh with difficulty.

Q. Is it because that you are a Burman that you find difficulty in getting money from the European Banks?—*A.* Yes.

Q. Is it the same with other Burmans also?—*A.* Yes, the same.

Q. In answer to Question 8 you say "It would be a great boon to Burmans if Government pioneer industries are started and handed over to Burmese companies as soon as they are on a sound footing." Are there any Burmese companies to take up big industries like that?—*A.* Yes, there are Burman rice millers.

Q. Are they engaged in any other industry?—*A.* They are traders who do their business individually.

Q. You say that it will be a great boon to Burmans if Government pioneer industries are started and handed over to Burmans. If Government starts a pioneer industry, say, paper-making or manufacture of rubber, are there any Burman companies who would be willing or who would be able to undertake such industries?—*A.* Yes, they will be very glad to undertake them.

Q. In answer to Question 1, part I, about financial aid, you say that money should be given from the Government Treasury to provide the initial capital for industries. Can you give any reason why Government should finance from their Treasury?—*A.* I mean the Bank of Bengal.

Q. Perhaps you are not aware that the Bank of Bengal cannot advance money on industries, the Bank rules are against such advances?—*A.* I have taken advances several times to the extent of one lakh 50,000 for the last 15 years. I have taken advances from the Bank of Bengal.

Q. On personal security?—*A.* Yes.

Q. But you say in answer to Question 2 that the Government Treasury should be the source from which the initial capital may be drawn?—*A.* Government should help a bank to help industries.

Q. Do you mean that there should be a separate bank assisted by Government?—*A.* Yes, to assist industries.

Q. In answer to Question 27 (*a*) you say "No such consulting engineers in Burma." Is there no machinery manufacturing firm who could advise about machinery?—*A.* There are, but they won't show the way how to do.

Q. Is it not in their interest to show the way, being sellers of machinery?—*A.* These firms have not got people who could advise.

Q. Are there not agents of machinery firms here?—*A.* They of course generally show the way how to use machinery, but they don't give full instructions.

Q. Their interest is to sell machinery and they must therefore give people their advice?—*A.* They don't.

Q. You say in answer to Questions 57 to 61 "In my opinion a Director of Industries should be appointed for Burma with an Advisory Board of Burmans." Do you want only Burmans, and nobody else?—*A.* There ought to be both Europeans and Burmans.

Q. Are there Burmans willing to serve on such a Board and who have some knowledge of business?—*A.* Yes, there are.

Q. Why don't they themselves do business then?—*A.* Because they don't know how to employ machinery.

Q. But if according to your suggestion the Advisory Board should consist only of Burmans, how will they be able to advise on the question of machinery?—*A.* The Board will consist both of Europeans and Burmans.

Q. You have no objection to have Europeans or Indians on the Board?—*A.* No objection.

Mr. C. E. Low.—*Q.* You say in answer to Question 2(*a*) "The banks in Burma and European concerns and these will never think of financing any native industry." But where do you get your finance from? From the Chetties?—*A.* Yes, from the Chettics.

Q. Where do the Chetties get their money from?—*A.* They get their money from their country.

Q. Do they get any money from the banks?—*A.* By hundi they get money from the banks.

Q. Why do the banks assist the Chetties and not assist Burmans?—*A.* It is beyond my power to say.

Q. In answer to Question 15 you say "What is urgently required in Burma is agricultural schools at different centres with an Agricultural College at Rangoon." Do you want agricultural schools for teaching the cultivators or for teaching people to teach cultivators?—*A.* Both cultivators and others.

Q. Also for people who would teach the cultivators?—*A.* Yes.

Q. Is there very much done at present in the way of showing cultivators improved methods? Are there many officials of the Agricultural Department who show improved methods to cultivators?—*A.* They do so already, but the number of officers is insufficient. If there are more officers, it will be better.

Q. In answer to Question 41 you say "The Government policy of letting land on a term of lease is unpopular and land required for industrial purposes should be granted in perpetuity." Is land for agriculture given out on lease, or land for industries in the towns? Which do you mean?—*A.* I mean land in the jungle. Village lands and town lands also are leased.

Q. For how long are leases given for town lands?—*A.* 10, 15 or 20 years.

Q. Don't you get leases for 99 years?—*A.* That is given only for house building purposes.

Q. Supposing a man wants to put up a mill on a piece of town land, which is the property of Government, will Government give him a lease for 99 years or longer?—*A.* In the case of town lands only a 30 years' lease is given.

Q. Is it so also in the case of a mill?—*A.* Yes.

Q. In answer to Question 98 you say "The present rates of railway freight are high." Is there any competition between the steamers and the railway?—*A.* Yes, there is a little competition.

Q. Which is the cheapest, the railway or the steamer?—*A.* The Railway make more money.

Q. You mean the railway charges more?—*A.* Yes.

Q. Is there only one steamship company or are there more?—*A.* Only one.

Q. Do they charge very high? Do they charge what they like?—*A.* They charge as before; they have not raised.

Q. With reference to what?—*A.* With reference to pre-war rates.

Q. Is there any agreement between the railway and the steamship company as to rates?—*A.* Not likely.

Mr. A. Chatterton.—*Q.* Have you any experience in handling paddy?—*A.* Yes.

Q. Have many godowns been built recently in the districts to store the paddy crop?—*A.* Yes.

Q. How is the finance of the paddy now stored arranged for?—*A.* They take money from the Chetties.

Q. What rate of interest do they pay on that?—*A.* From 15 to 18 per cent.

Q. Is this building of godowns going on extensively?—*A.* Yes.

Q. Do you know the origin of this? Why they are doing this?—*A.* Because they want to make money; they are holding out for higher prices.

Q. In the paddy season as it formerly existed were there specially seasonal rates for carrying paddy in the steamers?—*A.* They charge the same rate all the year round.

Q. With reference to your answer to Question 109, what jail industries do they carry on in jails in Burma?—*A.* Furniture and cane ware.

WITNESS No. 416. *Mr. J. Meikle.*

MR. J. MEIKLE (*Honorary Secretary*), *representing the Lower Burma Planters' Association, Northern Division, Rangoon.*

WRITTEN EVIDENCE.

The Association considered the questions submitted by the Commission at a meeting held on the 7th instant and instructed me to reply as follows to a few which more immediately interest this Association:—

III.—Development of Official Administration.

This Association consider that attention might be drawn to the Annual Forest Report (Burma) in which no reference is made to rubber except at the end of paragraph 3 on page 3 of the Resolution, also on page 19 where a reference is made to preparations to meet the demand for packing-cases for rubber plantations. They are of opinion that details as regards the acreage taken up for rubber, acreage actually planted, also in bearing in the province and the annual production might be published with advantage in this book. Statistics and Commercial Intelligence.

In the Report on the Administration of Burma year 1915-16, page 72, there is a casual mention made that—"Shipments of rubber aggregated 1,285,984 lbs. valued at Rs. 30·69 lakhs, an increase of 298,592 lbs. and Rs. 10·54 lakhs over the figures of the previous year," and on page 53 of the same Report, end of paragraph 81, the following appears—"There was practically no expansion in rubber cultivation."

In the Season and Crop Report for Burma for year ended 30th June 1914, at foot of page 5, there is a short paragraph devoted to rubber which to some extent gives the particulars this Association desire, and in the same report for the following year, *i.e.*, 30th June 1915, rubber is again disposed of in a few lines in paragraph 16, top of page 6, under heading "Other Crops."

"This Association have reason to believe it is the desire of the Local Government to see the rubber industry in Burma very largely extended and in the opinion of this Association it is desirable that such statistics as have been indicated should be more readily available in one book instead of scattered promiscuously through several."

This Association understand a scheme is now under consideration by the Local Government to establish in Rangoon a commercial museum and they take this opportunity to express their cordial support to same and strongly advocate the holding of periodical industrial exhibitions on similar lines to the one recently held at the Jubilee Hall during the visit of His Excellency the Viceroy. Commercial Museums, etc.

The exhibition referred to brought to light many provincial industries of which a great many visitors probably knew nothing or little about before. If such exhibitions are held more frequently they must exercise a beneficial aid not only in improving the products but in creating a demand for same.

With expanding rubber cultivation for instance there will be a very large demand for latex cups and large coagulating jars which local pottery makers might cater for and secure a large share of, with slight improvements in their methods of manufacture.

IV.—Government aid to Industries.

Here again it is known to this Association that the Local Government have a scheme under consideration to extend the cultivation of rubber in this province which contemplates giving financial assistance to rubber planters on reasonable terms. This Association considers this a progressive step in the right direction and they hope the scheme referred to may be completed and brought into effect as early as possible. Loans and money grants-in-aid.

V.—Technical and Scientific work.

Hitherto Government researches in the Agricultural Department have been directed to produce other than rubber with the exception of a mycologist who was sent to Burma for a short time a year or two ago to study the "Black Thread" disease, from which some rubber plantations suffer so much during the wet season. The recommendations of this gentleman are now being tried on at least one of the largest estates. What noticeable benefits have local industries received from researches conducted by Government Department.

This Association consider much more might be done by deputing a qualified man to study more closely the various other diseases affecting rubber in Burma. It would also be of great assistance to the rubber planting industry if the services of a qualified chemist who could advise upon improved methods of manufacturing rubber were available.

Such technical advise as has hitherto been obtained has had to be sought in other countries, such as the Federated Malay States, Java and Ceylon and only the larger companies have been able to afford this.

Quite a large number of smaller estates are springing up owned by Burmese, Chinese and others and the advantage of technical and scientific advice being readily available locally to them is much to be desired.

The bulk of the rubber hitherto exported from Burma is the produce of the large and well managed estates and enjoys a good reputation in the different markets to which it is sent and it is desirable that precautions should be taken to maintain this reputation by having technical and scientific advisers readily accessible to all local Planters.

Oral Evidence, 22nd January 1918.

(*N. B.*—Mr. MEIKLE was accompanied by Mr. A. E. C. FENOULHET, for oral evidence.)

Mr. C. E. Low.—*Q.* What is the area and the number of people concerned in your Association ?—*A.* (*Mr. Meikle*). We have at present about 33 members in the Northern division; the total area is about 15,000 to 20,000 acres.

Q. Is it all rubber area ?—*A.* Yes.

Q. What districts is it concerned with ?—*A.* It is concerned with Rangoon, Twante, Toungo, Shwegyin, Thaton, Moulmein and Amherst also Bhamo in Upper Burma.

Q. What is the southern division concerned with ?—*A.* It is concerned with Tavoy and Mergui up to Victoria Point; they have got their own Association in their own division.

Q. Has the question of the manufacture of rubber in Burma ever been considered by your Association ?—*A.* You mean manufacture on a commercial scale ?

Q. Yes.—*A.* No, not yet. I did hear of a certain local firm who considered taking up a rubber factory after the war with a capital of £20,000.

Q. Is anything of that sort done in the Straits ?—*A.* Not that I am aware of.

Q. Are there any special difficulties connected with the manufacture of rubber in the tropics which do not exist in temperate climates ? *A.* No, I do not think so.

Q. From the point of view of national security the manufacture of rubber is important, is it not ? *A.* Yes.

Q. And from a war point of view also ?—*A.* Yes, of course.

Q. It is advantageous to the country to export some reasonable proportion at any rate of your rubber in the form of manufactured articles, and thus more money will stay in the country ?—*A.* There will be an advantage, I think.

Q. And the manufacturer would thus also be working in direct contact with the producer of rubber who would thereby get information as to the way in which his rubber can be improved to suit the markets ?—*A.* Quite so.

Q. Is there any way in which you think Government can assist towards that end ?—*A.* Yes, I think Government might encourage the establishment of a factory by offering to purchase all their requirements of manufactured rubber from that factory; for instance, the Military Department would require a certain amount of rubber tyres for transport cars, and also electrical appliances.

Q. Turning to what you say about research, as you know probably, there have been discussions regarding the establishment of what I may call a tropical Pusa which I believe certain officials and non-official witnesses put forward, namely, that an institution in a suitable portion of Madras might be started to investigate problems relating to purely tropical agriculture, among which rubber of course stands the first: how would you regard an idea of that sort, or would you press for a purely local show ? *A.*—I think that we should have an institution of that sort for some years to come in Burma.

Q. Where do you get information from at present regarding technical difficulties in rubber growing, insect pests and so on ?—*A.* We have to send our managers once a year to Ceylon, and the Federated Malay States and Java.

Q. Do you get any information from the Government agricultural station at Peradenia in Ceylon ?—*A.* Yes, we get the agricultural bulletins and literature.

Q. I believe they also do research work in connection with rubber and other tropical products at the Government station at Peradenia ?—*A.* (*Mr. Fenoulhet*). Yes, but a lot of delay takes place if you send specimens there.

Q. Is there any similar tropical agricultural station in the Malay States ?—*A.* For rubber ?

Q. Yes, for rubber ?—*A.* Yes, at the head-quarters of the Malay States Rubber Growers' Association they do research.

Q. Is that a private affair, or is it under Government ?—*A.* No, I do not think it is under Government.

Q. You don't know of any Government research station for rubber and similar things in the Malay States ?—*A.* The Government agricultural department sent round an expert to examine soils for instance. The question of manures has been considered and the Government sent a specialist to the Straits and he took away samples of the soil.

Q. Do they investigate insect pests?—*A.* I do not know whether the Government do that or not.

Q. Are they very keen on rubber cultivation?—*A.* Yes, they are.

Q. Is it the case that the actual area under rubber in Burma and in South India is very small compared to that in the Malay States?—*A.* Yes, at present it is true.

Q. You speak about the large number of smaller estates springing up owned by Burmese, Chinese and others: do you apprehend any difficulty from them in this way, that they may put a lower style and quality of rubber on the market and spoil the name of Burma rubber?—*A.* Yes, I think they do to a certain extent, because they don't employ machinery at all, the smaller ones do not employ machinery, and they turn out inferior rubber.

Q. Do they adulterate it?—*A.* No, I do not think they adulterate it.

Q. The competition of the trade is a sufficient safeguard against that?—*A.* Yes.

Q. Do you think that it would be of advantage to the industry generally if those men had the requisite advice available?—*A.* Yes.

Q. How do these small traders market their rubber?—*A.* They sell mostly locally.

Q. Whom? To the larger estates?—*A.* Yes. *A.* (*Mr. Meikle*) The larger estates export to London or to the Straits.

Q. Are they largely companies registered in the United Kingdom?—*A.* Registered in the United Kingdom and in Burma.

Q. And they make their own arrangements for finance and shipment?—*A.* Yes.

Mr. A. Chatterton.—*Q.* Have you much difficulty here in connection with labour in the rubber estates?—*A.* (*Mr. Meikle*) We had difficulty at the beginning of the industry, not now.

Q. Where do you get your coolies from?—*A.* Most of our coolies come from the Coromandal Coast, they are Telugus and Uriyas.

Q. Are all these larger estates owned by Europeans? Are they properly equipped with preparatory machinery?—*A.* Yes. There are five large estates with up-to-date machinery.

Q. Do the owners of the smaller estates get their rubber prepared for the market in the factories of the larger estates?—*A.* In one or two cases they do, not all of them.

Q. Compared with, say, the Federated Malay States is the cost of production of rubber higher in Burma or is it about the same?—*A.* (*Mr. Fenoulhet*) It is, I should say, a little higher.

Q. Do you apprehend any danger of over-production here and a consequent slump in price?—*A.* Not at present.

Q. You have a large margin?—*A.* Yes.

Q. As regards materials imported by the rubber estates, do you import manure?—*A.* No. I do not.

Q. Do other planters?—*A.* I do not think they import much in Burma except on a very small experimental scale.

Q. What manures are you using?—*A.* The only manure I use is green manure.

Q. Do you use acetic acid for coagulating?—*A.* Yes.

Q. Where do you get your acid from?—*A.* From Japan since the war, previously from Europe.

Q. How much acid do you want for a pound of rubber?—*A.* One gallon of acid would coagulate 1,200 lbs. of dry rubber.

Q. Do the owners of the larger estates sell their rubber in London or in Colombo?—*A.* (*Mr. Meikle*) In London.

Q. You say that you have had a provincial exhibition which brought to light many provincial industries about which a great many visitors probably knew little or nothing before: that would be true of the first exhibition, but would it be true of a second exhibition, a repetition of the first?—*A.* Of course it would: commercial exhibitions are of great value and one would expect to see improvements or something new.

Q. How often would you hold these exhibitions?—*A.* Every three or five years

Q. Where do you get your latex cups and coagulating jars from now?—*A.* At present we import them.

Q. Are they made of metal?—*A.* We have tried tin lined cups. At present we are using glass cups.

Q. Do you get them from Japan?—*A.* We get them from Holland.

Q. Have you tried to get them from India?—*A.* Not glass; we have tried aluminium cups from the Aluminium Factory in Madras.

Sir F. H. Stewart.—*Q.* Referring to your paragraph III, Development of official administration, I am not quite sure what your point is: do you want to make out that Government has not had sufficient knowledge or has not given enough attention in the past to rubber

plantations?—*A.* No; as a matter of fact since writing that letter the information which the Association really want has been discovered in the appendices to the season and crop report, namely, details of acreage in the different districts under rubber, etc., on the lines on which the Association would like it, but the feeling is this, that any one coming to Burma to take up rubber would not in the ordinary course refer to the season and crop report, but that as rubber is a forest product would refer to the Forest Administration Report where he would expect to find all these details, and the feeling of the Association is that all these details should be confined to one book.

Q. Do you want the information published separately?—*A.* Yes.

Q. Then you refer to a scheme which the Government have under consideration for extending the cultivation of rubber, including financial assistance: can you tell us—if you like in confidence—what that scheme is?—*A.* They are now negotiating about that scheme. In the first place the idea is that Government will have suitable waste lands selected and reserved exclusively for rubber cultivation; if investors in rubber come along and apply for any of these lands, they could get them without delay and if they require financial assistance to bring them all under cultivation, Government would be prepared to advance Rs. 100 on every acre that they have planted at a reasonable rate of interest until the cultivation reaches the earning stage. At present one of the difficulties in Burma is to get money advanced for rubber cultivation where it is very hard to get a return before a considerable number of years.

Q. How many years would it be?—*A.* It would be about 8 years before the first year's planting begins to pay.

Q. Is that an adequate security to offer for the advances?—*A.* Yes, I think so, as long as the scheme is under proper State supervision.

Q. Would it necessitate expert supervision on the part of Government to see if the estates are properly cultivated?—*A.* No, I do not think so. I think any Forest official would be quite capable of supervising.

Q. But the Forest Department deal with other problems besides rubber questions?—(*Hon'ble Mr. H. Thompson*) It is dealt with in the Revenue Department.

Q. Then with reference to the question which Mr. Low was asking, is it your suggestion that Government should start a pioneer factory for the manufacture of rubber articles?—*A.* No, it is not part of my suggestion at present, but I think that it might be a very good thing if Government could encourage private enterprise.

Q. Do you think that a Government pioneer factory would be useful?—*A.* I think a rubber factory would be a very useful one.

Q. Who was the mycologist who was sent to Burma to study the 'the black thread' disease and so on?—*A.* His name was I. F. Dastur, B.Sc. *

Q. Had he special knowledge of rubber?—*A.* I do not think so.

Q. Your Association has not got an expert of its own?—*A.* No special experts.

Q. The Tea Association of India for instance has its own experts; you have nothing of the same sort here?—*A.* No.

Q. And you think that it would be a good thing if the Government would entertain such experts?—*A.* I think from the point of view of the small estates a Government expert would be desirable.

Q. Do rubber problems in Burma differ materially from rubber problems elsewhere in the Straits or in Ceylon or in Southern India for instance, or are they much the same?—*A.* (*Mr. Fenoulhet*) I should say they differ. I think we get here the 'black thread' which is developing into a form of canker; I think that is worse in Burma than it is in any other country owing to the heavy rain.

Q. Then you think it really would be useful for Burma to have a special expert?—*A.* I do certainly.

Hon'ble Mr. H. Thompson.—*Q.* Could you give us any useful information regarding advances on rubber and the manner in which capital has been raised hitherto for rubber cultivation, and the future possibilities?—*A.* (*Mr. Meikle*) Hitherto it has been mainly financed from Home, not much local capital.

Q. Did you try to get capital locally?—*A.* No, I have not tried myself.

Sir F. H. Stewart.—*Q.* From whom do you get your capital, from capitalists who are already in the rubber business?—*A.* I get generally from people who are connected with the promotion of companies here. But I have been told on the one occasion I have tried to raise capital here that people here would not care to tie up their money in a rubber plantation for 8 years without getting dividends; that is the difficulty we have locally.

* See Department of Agriculture, Burma, Bulletin No. 14 of 1916.

Witness No. 417.

Mr. T. Couper, I.C.S., *Director of Agriculture, Burma.*

Written Evidence.

Working capital is the great need of the cultivator, and Government has admitted this by its promotion of co-operative credit societies. Very inconsistent with this admission is the collection in Lower Burma of capitation tax, a poll tax of five rupees on adult males, in August, at the time of sowing the rice crop when the cultivator is in urgent need of ready money. The amount of the tax, inclusive of the land rate which is levied in lieu in certain towns, was in 1915-16 over fifty-seven lakhs, of which seven-tenths were paid by agriculturists. Though the balance is not taken from the cultivator, he is affected by its collection in so far as it makes borrowing more difficult and raises the rate of interest.

Hindrances to agricultural development arising from law and administration.

The result of collecting the tax in August is to reduce the outturn of the land. Transplanting increases considerably the yield of paddy, but the daily labour which it requires has to be paid in cash and this is ear-marked for the tax. So the cultivator is driven to broadcast his seed and to reap a smaller crop. If the broadcasted area is flooded or part of the seed fails to germinate, he cannot command cash, except at an unduly high rate of interest, to pay workers to patch out seedlings. Similarly he is unable to procure labour to maintain the exterior embankments which protect his holding from inundation or to keep in repair the interior bunds which regulate drainage. He has to purchase food for his ploughmen on credit and therefore at a greater cost. He has frequently to advance the tax for his seasonal labourers, often by borrowing, and if labour is scarce, the tax falls really on his profits. In these ways the cost of labour is swollen, outturns lowered and profits reduced.

The evils arising from the operation of the tax would be mitigated if collection were made after harvest and not in August. It is said that to collect the tax at the same time as the land revenue would prove inconvenient. This is open to question. Headmen would have to pay only one visit whereas now they must make two at least, and frequently they make many more, for collection in the rains is irksome and protracted. In any case administrative inconvenience is no valid excuse for levying the tax at a time when it works so much harm.

The tax, however, is so unfair that it would be better to abolish it altogether. It operates without discrimination: the man with an income of nine hundred rupees pays no more than the labourer with ninety. Similarly unequal is the incidence as between different localities. In parts of Kyaukpyu where a ploughman is paid a daily wage of five annas it takes sixteen days' work to pay the tax whereas in Hanthawaddy five days are sufficient.

If capitation tax in Lower Burma is abolished, the *Thathameda* tax in Upper Burma would probably have to go at the same time. It is assessed on households and in 1915-16 amounted to thirty-nine and a half lakhs. In so far as it is collected in January after harvest, it is less open to objection than capitation tax. But though it is aimed at income from non-agricultural sources, it is commonly supposed to fall in part on agricultural income and its incidence is often found to be inequitable, allowing the rich man to escape too lightly.

The total sum collected in capitation and *Thathameda* taxes was in 1915-16 ninety-seven and a half lakhs, and it is incumbent on anyone who suggests the removal of these taxes to show how an equivalent could be raised. My submission is a house tax and additional customs duty.

The number of houses in Burma at the last census was 1,958,296. If the rate of increase since the census has been the same as between 1901 and 1911, the number now exceeds 2,300,000, and taxation at the average rate of three rupees a house would bring in seventy lakhs. Such a tax would be assessed and collected at the same time and by the same agencies as land revenue. If levied on the superficial area covered by the house, it would in effect be a graduated tax on income, and the labourer would pay much less than at present. It would admit of differentiation between the trading town and cultivating village so as to allow of greater equality in the taxation of trade and agriculture. Under its operation the farmer would pay less for labour and he would have money available to procure it at the time when he requires it.

In 1916-17 the value of the imports into Rangoon from foreign countries and from India was Rs. 11,74,00,000 and Rs. 9,02,00,000 respectively. An *ad valorem* duty of one and a half per cent. over and above the duties now levied would yield thirty-one lakhs, more than the sum required to make up with the house tax the amount now collected by the capitation and *Thathumeda* taxation. Such a customs duty, with exceptions in favour of raw material such as silk and tobacco, is justifiable as being in the nature of a sumptuary tax. The extravagance of the province as compared with India is notorious, and can be proved from trade statistics. It has several times been pointed out in the annual reports of the Chief Collector of Customs, for example in 1913-14, "Whereas the proportion of the population of Burma to the combined population of India and Burma is but 3·8 per cent. (according to the census of 1911), Burma's share of the following luxuries into British India was—salted fish 85 per cent., milk, condensed and preserved, 65 per cent., biscuits and cakes 42 per cent., canned and bottled provisions 42 per cent., cigarettes 39 per cent., silk piece-goods 34 per cent., boots and shoes 30 per cent., farinaceous foods 25 per cent., and liquors 25 per cent."

The imposition of additional customs duty might result at first in temporary reduction of imports. But if the contention be correct that the present taxes hamper cultivation and that their removal will make a permanent addition to productive power, then any fall could be only temporary, for increased purchasing power must mean increased imports.

In 1908 when the area under paddy was 9,330,000 acres exports of cargo rice were 2,430,000 tons. In 1915 when the area had risen to 10,050,000 acres and after Upper Burma as the result of extended irrigation had begun to grow paddy for export, the cargo rice shipped from the province amounted to only 2,410,000 tons. These figures, though they cannot prove, yet support the opinion that wide areas are becoming less fertile. It can hardly be otherwise, for at least 3,000,000 acres are cropped continuously without anything being put back into the soil. These 3,000,000 acres are in Lower Burma and are cultivated by tenants on yearly leases. Even if the tenant sits on the land for several years, he does so at the will of the owner who at no time gives him more than a year's lease. The consequence is that the tenant will not manure the land. That, he contends, would mean the raising of the rent against himself, for the effect of any manure is not exhausted in one year. This is in accordance with the manurial experiments of the Agricultural Department; the operation of farmyard manure can be traced for three years or more, the immediate profit obtained from bonemeal does no more than pay its cost and any advantage derived from its use lies in the residual effect, while superphosphate is thought to form compounds which afford plant food for nine or ten years.

It is therefore useless over three-eighths of the rice-growing area in Lower Burma for the Agricultural Department to teach the cultivator how best to conserve farmyard manure or to demonstrate the use of such artificial manures as may be within his power to purchase. Suggestions have been made for increasing the outturn through extension of cultivation as by throwing open reserved forests. But in the long run exports can be increased only by better cultivation of old land. This will not be attained under present conditions. The remedy appears to be an Agricultural Holdings Act which will ensure that a tenant on quitting his holding receives the value of the unexhausted manures, as well as compensation for disturbance when the owner terminates the tenancy without good and sufficient cause and for reasons inconsistent with good agricultural management.

The administration of the Village Act is a serious hindrance to successful agriculture. If he is to obtain the best return from his holding the cultivator should live on it all the year round. But this is forbidden to him. In the cultivating season he is allowed a temporary hut on the land, but this must be vacated, if not dismantled, after harvest. This rule makes for bad cultivation. It prevents the folding of cattle on the land and necessitates the carting of manure from the village, which is often several miles away. It hinders the repair of old, and the construction of new, bunds in the dry weather. It renders impossible the erection of permanent buildings and equipment. The rule is thought necessary to keep down crime. But what fosters crime is the existence of isolated huts where criminals are unwatched. If the country were covered with farm buildings, the movements of criminals could be more readily traced.

Government should take power to drain areas of rice-growing land at the cost of the owners. In many parts drainage is at present chaotic. In place of erecting embankments round their holdings so as to keep out salt water land-owners construct large bunds or a series of large bunds in the streams which should carry off the rain, with the result that the channels silt up and the drainage of wide tracts is ruined. Legislation should be undertaken to enable streams to be unsilted and kept free of obstructions and if necessary to permit of new drainage cuts being dug, all at the expense of those whose land will benefit.

The Agricultural Department in Burma.

The staff of the Agricultural Department comprises at present two Deputy Directors of Agriculture to each of whom is attached an Assistant Botanist, an Agricultural Chemist to Government who has five assistants for work in the Laboratory, and an Assistant Entomologist who works under one of the Deputy Directors. An Agricultural Engineer has recently been appointed as an experiment for one year. Lower Burma with part of the dry zone is in charge of one Deputy Director, northern Burma with the rest of the dry zone and two farms in the Shan States forms the circle of the other. In the Southern Circle there are two experimental farms each in charge of an Agricultural Assistant. There are also six seed farms, each under a District Agriculturist. In the Northern Circle are five experimental farms, two of them under Agricultural Assistants, the others under Overseers or District Agriculturists.

The Deputy Directors have found improved strains of rice and early cotton, and these are being multiplied for distribution. They are at work on wheat, sesamum, late cotton, gram, *arhar dhal* and other crops. Manurial experiments have been conducted for many years. The Agricultural Chemist is making an analysis of typical soils in the province and is working on the Rangoon bean to try to find a strain which shall be free from prussic acid.

Deputy Directors are frequently asked for advice. They have published numerous leaflets dealing with crops and methods of cultivation. It is not thought that these do much good though there is a demand for them, more often from landlords living in the towns than from actual cultivators. Demonstrations of improved methods of cultivation are occasionally given outside the departmental farms. Every year a few members of co-operative societies receive a short training on the farms.

It is impossible for Deputy Directors to deal adequately with areas so large as their present circles. In the Southern Circle there are 15,000,000 acres of cultivation. A third

Deputy Director and an Economic Botanist have been sanctioned, but it is difficult to get these posts filled at present. The Local Government is considering a scheme for the enlargement of the department. It has been proposed to raise the number of Deputy Directors to eight and to recruit a sufficient number of Agricultural Assistants to allow of one being posted to every two districts as Superintendent of Agriculture.

Agricultural assistants are at present sent to the Agricultural College at Poona for training. But it is doubtful whether that college will be able to receive so large a number as it is proposed to recruit and it may be found necessary to entertain lecturers to train the assistants locally.

In Lower Burma more seed farms are required. One in each township would not be too many to grow pure improved seed under local conditions and gain the cultivator's confidence. The cost should be met from provincial funds and not from the District Cess Fund as at present, for if the cultivator makes larger profits so that a greater revenue may fairly be taken from him, it is provincial funds which will mainly benefit.

If Geological Survey discovered phosphatic iron ores or phosphate deposits which could be profitably worked and would furnish cheap artificial manures, the outturn of paddy would be considerably increased. It is hoped that the Agricultural Engineer will make a survey of sub-soil water in the dry zone as soon as the necessary plant can be procured.

Sugar and gunny bags are imported in large quantities. A sugar refinery has recently been erected in the Toungoo district, and the Local Government has given assistance by promising to assess sugar-cane cultivation in the neighbourhood at favourable rates for a term of years in order to ensure at the beginning an adequate supply of cane for crushing. The area under cane cultivation is 17,000 acres, scattered throughout the province and could be largely extended so far as soils and climate are concerned. The Government of Bengal has lent the services of a jute demonstrator so that it may be ascertained whether jute can be grown at a profit in Burma.

(*Mr. Couper did not give oral evidence.*)

WITNESS No. 418. *Mr. C. W. Law.*

C. W. LAW, BAR.-AT-LAW, *President of the Tenasserim Progressive Association, Moulmein.*

WRITTEN EVIDENCE.

Financial Aid to Industrial Enterprises.

The only experience I have had of the raising of capital for industrial enterprises is in connection with a small motor car company that with the assistance of a few friends I established in 1907, to run between Moulmein and Mudon (19 miles) and that was wound up in 1912 owing to our inability to make it pay. Capital.

That and another small company of the same description—started about the same time—and that was amalgamated with the first before both failed—had no difficulty in raising, locally, the comparatively small capital required. I also know that the Moulmein Rubber Plantations—a promising enterprise—had no difficulty in obtaining the necessary capital in Burma and India. Since the failure of numerous companies started in Rangoon I do not think it would now be so easy to raise capital, without Government assistance, for any new industrial enterprise.

Beyond the fact that the Local Government assisted the late Mr. George Dawson in an inland river service (the Salween Steam Navigation Company) by granting him a monthly subsidy, I have no experience in regard to the question asked. Mr. Dawson's enterprise was a success and after his death the business in question was taken over by the Irrawaddy Flotilla Company whose launches are still running and of proved public utility. Government assistance.

Government aid might, I think, be given in the shape of subsidies; guaranteed dividends in the case of new railways for a limited period; or provision of part of share capital in case of new industrial companies and by helping to establish provincial hypothec banks. Government aid.

In the case of new railways or public companies by appointment of Government directors and in other cases by audit and recurring inspection of business to which loans or subsidies have been granted.

I have no experience of Government pioneer factories but I am of opinion that Government might establish pioneer factories in connection with "Kapok" and cotton in the Amherst district and sugar in the Thaton district, say at Bilin, where the cane grown is of a superior quality. The experimental farm at Khagrabari in Assam (Appendix A) appears to be an undoubted success. The cultivation of coffee, cocoa, the castor oil plant, pineapple, agave and camphor and in parts of the Mergui district spices, for all of which the climate of Tenasserim is specially suitable also deserve special encouragement. As it is very desirable that Great Britain should become independent of America for its cotton supply, I would advocate that Government should take up the question of cotton growing in the Tenasserim provinces, at any rate in the Amherst district. Both Pernambuco and Caravonica silk cotton, hardly perennials, grow easily in this district in the poorest soil. Specimens of the former, grown in and near Moulmein and sent home by Miss Haswell (a missionary lady) and others, was Pioneer factories.

pronounced by both the British and French Commissioners at the Franco-British Exhibition of 1908, to be of excellent quality and suitable for weaving. A Diploma of Honour was granted for this Exhibit. Attempts to cultivate this class of cotton have been spasmodically made in the early days of our acquisition of Lower Burma and since, and within the last few years a plantation, on a very considerable scale, was started in the Attaran district. That none of these experiments met with success was owing, I believe, to want of experience and defects of management. There is I think a great industry to be effected in this commodity if Government would only give a lead in the matter by starting an experimental plantation.

I would hand over the pioneer factories to private capitalists or companies as soon as the new industry was shown to be commercially practicable.

Technical Aid to Industries.

Industrial surveys. Undoubtedly surveys are required. Want of communications and incomplete survey of the Tenasserim division has greatly retarded its development. It would be advisable to appoint a geologist to go over the ground traversed by the late Dr. Helfer in 1837-38 whose interesting report as to the resources of these provinces is of great value.

Assistance in Marketing Products.

Commercial museums, etc. My opinion of commercial museums is that they are of much use in educating and stimulating effort. The recent industrial exhibition held in Rangoon aroused widespread interest, and having regard to the mineral richness of the Tenasserim provinces a section containing properly labelled specimens of all minerals would have been most useful. A collection of such in each of the six most important towns in Burma would, in my opinion, be exceptionally valuable.

Other forms of Government aid to Industries.

Banking facilities. Industrial and hypothec banks such as are described by Mr. R. R. Ghose in his article in the December 1916 number of the *Modern Review* would probably be found of very great assistance (Appendix B).

Land policy. I am of opinion that the agricultural development of the country is much retarded by the avowed policy of the Imperial Government to prevent the introduction into Burma of a landlord class. The country is sparsely populated, its extent enormous and the evils attendant on a permanent settlement do not exist. Under these circumstances it appears to me that for the advancement of the country the proprietorship of large tracts of land by well-to-do owners is desirable. Provision could be made in the grants to prevent rack renting or other injustices on the part of the landlord. Further the present policy is largely futile. We have a good many large landowners in the Amherst and Thaton districts, men who have bought out smaller owners who, in many cases, have become tenants of the purchasers. Then the rules preventing the sale by a grantee of the land granted to him by the Government without the permission of the Deputy Commissioner until the expiration of five years after the land has become assessable to revenue is, I think, an unnecessary check on the free transfer of land—which, so long as a transfer is registered, should be as easily disposed of as any other form of property.

Other forms of Government action and organization.

Transport facilities. It is impossible to say to what extent but it is obvious to any one residing in the Tenasserim provinces that industrial development is greatly hindered owing to want of communications.

I would strongly recommend the taking in hand, without further delay, of the construction of the Moulmein, Ye, Tavoy railway which, I may add, has been noted by the Board of Communications appointed last year as one of the railways to be constructed within the next ten years.

APPENDIX A.

Cutting from the "Indian Review," Volume XVIII, page 72, January 1917.
Sugar Cultivation in Assam.

The Chief Commissioner of Assam visited the Government experimental sugarcane farm at Khagrabari, near Nalbari, in the district of Kamrup, recently. It may be remembered, says a contemporary, that three years ago this experiment was initiated, it being considered that the soil in North Kamrup was suitable for the cultivation of sugarcane on a large scale which, if successful, would admit of a considerable enterprise being started in the province of Assam.

Anyone now going to the farm will see a magnificent expanse of 270 acres of sugarcane of the finest quality in full bearing. It has been said in connection with this farm by an expert that Assam is now the possessor of what every country growing sugarcane desires, but not another country possesses, that is to say, a Government experimental sugar industry

station working on a commercial basis. The expert, in question, says that our great competitor Java has tried for years to attain this object, as also Mauritius, Cuba, Hawaii, Jamaica, South Africa, Brazil, etc., and that all have failed in what Assam has succeeded.

APPENDIX B.

Cutting from the "Modern Review," December number, article on Hypothec Bank of Japan by MR. R. R. GHOSE.

The lines on which the business of this bank is transacted are as follows:—

"To make, on the security of immoveable property, loans redeemable in annual instalments within the limit of period of not more than fifty years; to make loans on a similar security, redeemable at a fixed term of not more than five years, provided the total amount of such loans does not exceed one-tenth of the total amount of loans redeemable in annual instalments (the amount of loans made on the security of any immoveable property may not exceed two-thirds of the value thereof as appraised by the bank); to make loans without security to prefectures, districts, cities, towns and other public bodies organized by law; to take up the mortgage debentures of local hypothec banks; to accept the custody of gold and silver bullions and negotiable instruments. The bank is authorized, when at least one-fourth of its nominal capital is paid up, to issue mortgage debentures up to an amount not exceeding ten times its paid up capital, provided the amount of such debentures does not exceed the total amount of outstanding loans redeemable in annual instalments and the debentures of local hypothec banks in hand. These debentures shall be redeemed at least twice a year by means of drawings in proportion to the total amount of redemption of loans redeemable in annual instalments in the same year and the debentures of local hypothec banks in hand. Besides for each issue of debentures premiums of various amount varying from ten to one thousand yen (one rupee nine annas approximately) are allotted to a certain number of the debentures determind by drawings."

This attracts smaller capitalists to subscribe for the debentures of local hypothec banks. The Government guarantee profit for ten years from the founding of the bank, to the amount of 5 per cent. on the paid up capital.

Local Hypothec Banks.

These run almost on the same lines with slight modifications.

"They make loans redeemable within thirty years instead of fifty, and on security redeemable in a fixed term of five years, provided the total amount of such loans do not exceed one-fifth of the total amount of loans redeemable in annual instalments (loans made on the security of any immoveable property may not exceed two-thirds of the value thereof as appraised by the banks); they do not make loans to prefectures and districts; make loans without security, redeemable in a fixed term of not more than five years to more than twenty persons combined with joint liability, who are engaged in agriculture or industry and whose reliability is recognized. Besides, the banks may be entrusted with the receipt and disbursement of the public funds of prefectures. Each of these banks is authorized, when at least one-fourth of its capital is paid up, to issue mortgage debentures to an amount not exceeding five times its paid up capital. Such debentures may not however exceed the total amount of outstanding loans redeemable in annual instalments. The debentures shall be redeemed at least twice a year by means of drawings, in proportion to the amount of the redemption of the said loans. In accordance with the provisions of the Law for giving support to the local hypothec banks, the Government gave over to the prefectures funds with which to subscribe to the shares of the respective local hypothec bank."

(*Mr. Law did not give oral evidence.*)

WITNESS No. 419 *Maung Chit Pe.*

MAUNG CHIT PE, *Pleader and Land-owner, representing the Tenasserim Progressive Association, Moulmein.*

WRITTEN EVIDENCE.

In Burma, people cannot go in for industrial pursuits for want of— Government assistance.

(1) Adequate capital;

(2) Technical, industrial and commercial education and expert advice; and

(3) Government help and encouragement.

They will not be able to do anything in the way of industrial development unless the Government take the initiative and give them full support in the following ways:—

(1) The Government may establish a department in Burma to collect information as to existing indigenous industries, their needs and the possibility of improving them; to carry on investigation as to which industry is best suited to what part of the country and to introduce new industries;

(2) The Government may import technical experts and pioneer some useful industries in order to give a practical demonstration of the earning capacity as well as processes and methods leading to success and may afterwards hand the industries over to some industrialists; preference should always be given to indigenous industrialists. Suitable men should be trained in these pioneer factories to enable them to start similar factories;

(3) State banks may be founded in each province with the objects, amongst others, of assisting indigenous industries by giving short as well as long term loans of public money repayable by instalments;

(4) Bounties and subsidies may be given at times in order to provide against keen foreign competition;

(5) Machinery, tools and appliances may be supplied on the hire-purchase system to cottage industries as well as to factory industries and the Government should guarantee the efficiency and suitability of such commodities; and

(6) The Government should send every year about a dozen promising young men from Burma to Europe for training in technical and industrial education to be received in workshops and factories as well as in schools and colleges.

Citronella oil.

I have also several other suggestions to make which I will do in the following account of the citronella oil industry in which I am actually concerned.

I own a citronella grass plantation measuring about 100 acres in the Amherst district Tenasserim division. It is covered by leases obtained from the Government. It appears to me that some of the revenue officers are rather reluctant and even jealous to exercise their powers in granting sufficiently large areas of land though the applicant may be a native of the country with a certain amount of means at his command to carry on the industry. Besides, on a sentimental ground of objection on the part of the neighbouring villagers, such application is liable to be rejected. Government should make it a rule that to a *bonâ fide* applicant who is a native of Burma and who has fairly good means to carry on the work, sufficient areas of land should be given for industrial purposes and his application should not be rejected unless there is a very good reason shown against it.

There is a vast area of jungle land between Amherst and Tavoy in the Tenasserim division and for want and transport facilities by road, rail or water it is not exploited although it will be very suitable for industrial and mining purposes. Government should open a railway line from Moulmein to Ye or Tavoy as soon as possible. In the meantime in order to attract enterprising industrialists the Government should allow them the use of the land in that locality for industrial purposes free of revenue assessment. In Burma the citronella oil industry was started in Amherst district only a few years ago and it is still confined to Amherst and Thaton districts of the Tenasserim division. There are only a few plantations yet. My plantation is being worked by two fireheated copper stills of the capacity of 100 gallons each. Other plantations are also being worked by the same kind of stills. Copper stills cost nearly Rs. 2,000 each. To work with these stills of rather a primitive nature is very tedious. Only six cookings can be had during twelve hours from each still and each cooking yields a little over one pound of oil. A pound of the oil fetches in England about two shillings and six pence. We want steam stills to work with in our plantations. It is said that the consumption of fuel will be very much lessened and the produce of oil greater by using steam stills. The drawbacks are that it is very costly and it demands some practical knowledge. Ceylon and Java, I understand, use steam stills in their citronella plantations. The Government may supply steam stills to the promoters of this new industry and the payment may be made by instalments and the Government may import an expert either from Ceylon or Java to show us for a short time the working of the same: or the Government may start in that locality between Amherst and Tavoy a pioneer citronella oil factory to be worked by a steam still for purposes of demonstration. I believe it will be a paying concern and the Government will readily find private individuals to take it over after a time. Another important point I wish to press upon the Government Forest Department is to allow the owners of the citronella oil industry to use the fuel without any charge from the existing fuel reserves. The Government may also form new fuel reserves expressly for this industry. Unless this concession is granted this nascent industry will soon meet its death.

We have to send our oil by rail from Moulmein to Rangoon and from there it is shipped to England. In this respect also the Government may see their way to arrange with the railway and shipping authorities to give special concession rates to this industrial product and also to give every facility for the transport of the same.

Our agents in London dispose of the oil for us. It will take at least six months to get remittances from our agents. This greatly handicaps the carrying on of our work. If there is a State bank or an industrial bank aided by the State in the province, we may be able to draw the price of our oil at the time of shipping on the bill of lading by paying a small discount.

Prior to the advent of our oil in England the Java oil was considered to be the best in the English market. Our agents informed us that Burma oil is equal to the Java oil in quality and we are now competing with it. Buyers at Home may be reminded that Java is a foreign country and Burma is British and that preference should always be given to Burma oil.

So as not to be crippled by competition the Government should give us the different forms of help suggested above.

(*Maung Chit Pe did not give oral evidence.*)

WITNESS No. 420.

MAJOR D. N. LEIB, *Divisional Commander, the Salvation Army, Rangoon.*

WRITTEN EVIDENCE.

The Salvation Army Work has only been opened in Burma within the last two years, so I shall not be able to speak as fully as our officers could regarding our work in India, but no doubt they have already spoken fully regarding industrial conditions there. Industrial experience in Burma.

As you will know, our industrial experience since we commenced our work in Burma has been confined to juvenile adult criminals, who have been handed over to us by the Government and the jail authorities, and who are to complete their sentences under our auspices, and regarding whom I now especially write.

The three trades which we have started in the Institution and are now developing are furniture-making, carpentry, and all kinds of cane work. We have already proved that though the Chinese (we have had some in the Institution) may be superior to the Burmans, which may be due to a certain extent to the innate independence of the Burmans and their unwillingness to work; yet we have proved that the Burmans are teachable and given the opportunity to learn can be made into very capable workers. We have also proved in our Institution that the work of the Burmese workmen, under European supervision, is very good in quality and can compare very favourably with the great firms at Home. No doubt, you will say that the men whom we have in our Institution have come from the jail and have learned their crafts there under jail discipline; but in the Salvation Army there is a certain measure of discipline enacted; yet the Burmans have proved and do prove their ability to be good craftsmen and can compare with other nationalities if they can have proper instruction and wise pressure brought to bear upon them as a nation. I have no doubt in saying the future of the Burmese may be an industrial success. We have proved by the work which is being done in our Institution that it is equal to any of the work made by the great firms, not only chair making, but office and household furniture and carpentry work of any kind. They have only got to have a design placed before them and under proper supervision, will have it carried out. The same can be said regarding all kinds of cane and basket work.

Therefore, after nearly two years' close observation of the Burmese race and Burma, I respectfully state my opinions as follows:—

It would be wise that the education of the province of Burma should be placed under the charge of Local Boards combined with a good staff of teachers who could teach both the necessary Anglo-vernacular curriculum of schools and industrial instruction. This could be worked on the basis of Napoleon's maxim "that every soldier has a marshal's baton in his knapsack,"—*i.e.*, if a boy shows an especial ability to a proper and a complete education as supplied by the Director of Public Education, well and good; therefore this should be judged by either the Local Board, or a technical board deputed by them, to decide the boy's future. This technical board should consist of teachers of the ordinary routine of schools and the industrial instructors who would decide upon the abilities of the boy. Control of education by local bodies.

Then in the case of the boy students, when it is seen wise that they should receive an industrial training, he should have only the necessary Anglo-vernacular education which is necessary; then for them to be transferred for his industrial training according to the bent of his ability and natural aptitude, or both trainings to run concurrently.

For instance, if he is chosen to be a carpenter, he should be taught geometry, as that is essential to the making of a good carpenter. So hence the same principle applies to any other trade which helps to form the industrial world of Burma.

It would be wise to have certain rewards and incentives to encourage the boys in all industrial courses, the same as is usual in all educational institutions.

Therefore, I believe, if these Local Boards were wisely formed in the centres throughout Burma, then the ordinary education as decided by the Director of Public Instruction could work harmoniously with the industrial education of the boys. Industrial education.

In my remarks I am trying to speak not so much regarding the higher but the lower forms of technical education, which would embrace the lower classes of the people of Burma.

It will have to be borne in mind that suitable instructors will have to be found. At the least two or three thoroughly efficient instructors, as it is a mistake to think that a man can teach any particular trade, unless he himself is efficient.

The Industrial Commission will be cognizant of the Leed's Technical Institution, and other Institutions of that class at Home, which combines the ordinary school and technical training.

If funds are obtainable I would suggest that the Local Boards carry out on a modified scale a combined education upon similar lines to the Leed's Technical Institution, throughout Burma, and I think good could be done.

I understand that at present there is a stigma throughout Burma that if a Burman is a good craftsman, he has learned his trade in jail; but if there are these Institutions formed

throughout Burma, the stigma will, at once, be removed; then with the proper incentives Burma may become with its fine mineral and forestry resources a first class industrial country.

The Insein Government School for Engineering, although primarily concerned with the training of young engineers in civil and mechanical engineering, is doing a good work, and if it could be extended and if other schools on a similar basis could be formed, it would greatly benefit the country.

As it will be expensive to have European instructors for the different branches of technical education throughout the country, a scheme such as the Insein Government Engineering School, for the training of local instructors would be very good.

Government assistance.

There is one difficulty regarding local workmen in carpentry throughout Burma, the lack of seasonable timber especially in other woods besides teak (and teak is not by any means the best of Burma woods for furniture, as, generally speaking, the minor merchants and furniture dealers cannot afford to stack timber for some years until it is properly seasoned). This difficulty might be solved by some kind of help from Government or Local Boards given to merchants in particular districts to enable them to have the wood stacked and seasoned for some years.

Apprenticeship system.

No doubt when the different crafts are established in Burma, then the training of apprentices might be left to the different established firms, as at Home. But that is not yet. Then many successful firms do not want to be worried with apprentices.

After thought I have decided not to speak on the silk industry, as far as Burma is concerned, although I believe that it is an industry which might be developed and made of great use for the people. As the Industrial Commission no doubt have interviewed our silk experts throughout India, they will have received better knowledge than I could give them regarding Burma. Then again Mr. Hurst, Principal of the Saunders' Weaving Institute, Amarapura, was one of our silk experts in India and I believe he thoroughly understands the silk industry and its adaptability for Burma, and I am given to understand that he is to speak before the Commission; therefore, he will be able to speak with knowledge.

Our patented hand-loom is being made and sold in Burma, which is so made to enable the peasantry to do their weaving in their own homes.

I am enclosing * some of the Annual Reports on Silk Centres of the Salvation Army in India and Ceylon; also the Report on Seven Years' Work done by the Salvation Army on the Tata Silk Farm, Bangalore City, which probably will be beneficial to the Industrial Commission.

I may also say that, as Burma is largely an agricultural country, agriculture might be taught technically and scientifically by the Local Boards, in different parts of Burma, which might be suitable, and it would very probably be made to pay after the initial outlay.

(*Major Leib did not give oral evidence.*)

Mr. D. C. Ludington.

WITNESS No. 421.

MR. D. C. LUDINGTON, *Superintendent, Meiktila Technical School, representing the Indian Union Mission of Seventh Day Adventists, Lucknow.*

WRITTEN EVIDENCE.

Financing of industries.

Q. 9.—Tanning of hides could be made a paying enterprise, in the Meiktila District, if capital could be obtained. At present hides are tanned by a local process using bark which is very plentiful in this district.

Limits of Government assistance.

Q. 13.—After Government aid has been received to the extent of causing the enterprise to compete with existing enterprises the aid should be reduced or withdrawn altogether.

Q. 14.—External trade should not govern the limits of aid to home industries, but home industries should control external trade.

Exhibitions.

Q. 31.—Industrial exhibitions are a fine thing and should be encouraged by Government. Local exhibitions at the heads of districts or divisions would be good.

Apprenticeship system and industrial and other schools.

Q. 46.—All boys in this school (Meiktila Technical School) are compelled to take one or more trades.

Q. 47.—I have observed that the people generally are taking a greater interest in industries than a few years ago. Many of the highest people of the land are anxious that their sons should learn a trade of some kind in addition to their school qualifications.

Q. 50.—Technical schools should be under a Department of Industries, but it should work with the Educational Department in the controlling of schools where they are both concerned.

Training of supervising and technical staff.

Q. 51.—Managers who show talent should be sent to other countries to study conditions and methods until suitable experts could be obtained to train men in this country.

(*Mr. Ludington did not give oral evidence.*)

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* Not printed.

Witness No. 422.

Engineer-Lieutenant W. A. Williams, *Commander, R.I.M., Engineer and Shipwright Surveyor and Superintending Engineer, Government of Burma; Secretary, Burma Boiler Commission; Chairman, Board of Examining Engineers, Burma Boiler Commission; Examiner of Engineers and Engine Drivers under the Inland Steam Vessels' Act and also under the Merchant Shipping Act; Inspector and Licensing Authority for Vessels carrying oil in bulk, Rangoon.*

Written Evidence.

Undoubtedly Burma is industrially backward and its people, at first sight, seem to be extraordinarily apathetic, but there appears to me to be no adequate reason why the country should not develop at a great pace if Government will treat the matter seriously and kill the existing vagueness about industrial desiderata for the people. Industrial policy of Government.

I think the chief aids to Burma's progress lie in new education, new communications and the creation of an industrial office for the whole of India, including Burma, but this would be more or less futile unless a sound policy is provided in each case and duly popularized: Public appreciation and enthusiasm are most necessary and these can only be obtained by the declaration of simple policies, a guarantee of their continuity, and an attitude by Government less diffident and vacillating than usual.

Regarding finance to develop the former policy, Government should be fearless as it can always feel that all money so spent is really merely in circulation, as, but for the little which would go to teachers from Home, the whole money would remain in the country, and, if not in the pockets of Peter would be in those of Paul. This war with its enormous expenditure has distinctly shewn that the old estimate of national wealth in terms of metal was hopelessly wrong and that all future financial formulæ, to approach the truth, must contain a multiple in terms of circulation and this being so, there should be no hesitation in placing new indirect taxation to provide generously for the carrying out of this policy the apparent cost of which, however great, must return to the public almost immediately and must remain insignificant when considered in terms of national prosperity.

In considering this subject in its relation to an industrial population we dare not do so without first ascertaining the needs of such a population. Firstly, and always, we must admit that every workman should be in a position to contemplate marriage at the age of 21 and that he should be able financially to do so is in the best interest of national prosperity and social contentment. Secondly, that in acquiring his industrial skill he must pass through a period of at least five or six years before he can be considered useful or reliable enough to warrant his employer paying him anything like a sufficient wage. Thirdly, his work and its usefulness must be judged by the best world standards which we may generally assume to be British. Fourthly, that mathematical and mechanical teaching in the vernacular is a definité handicap for a pupil, as his knowledge, at best, must be secondhand and limited, and of little help to him in serving a non-vernacular master. Policy of industrial education.

The above four conditions should, I think, form the boundaries of, and provide the light for, a sound industrial educational policy which when created should no more be deprived of generous funds than a garden of ample water.

If we accept the above, the syllabus of all the big schools in Burma should be most carefully designed so that the youth of fourteen might, with little effort, leave a day school thoroughly grounded in all that is necessary to commence an industrial life. (See Appendix A wherein the question of teachers is also dealt with.) This syllabus need in no way adversely affect the education of those pupils wishing to go in for the leisured professions but on the contrary should logicise their minds to their great advantage. I would recommend that the new system should commence in all the big schools of Burma, and that the Rangoon Municipality should build and maintain a well equipped technical school, chiefly for afternoon and evening classes for the boys at work during part of the day. This school should be run almost entirely from municipal funds, without any income beyond Rs. 2 per year from each student, and should conform strictly to the rules of the Science and Art Department of South Kensington, whose certificates they should issue. My experience as an examiner goes to show that there is an almost unsuspected wealth of application amongst the many peoples resident in Burma and that results can be anticipated easily comparable with those at Home. I am fully alive to the difficulties of poverty, distance, and meals, but these difficulties all fade before judicious generosity of time and money. Half-time schools.

Well equipped subordinates appear to me to be the foundation of industrial success and I think there will be found in their ranks a sufficiency of brilliancy, which can be easily brought to the managering grade, so that a dearth of sound managers need never be feared. The policy, I recommend, is really not experimental as the technical heads of the British Admiralty have, for the greater part of the last century, nearly all come from the bottom scale and been similarly trained.

Whilst on the subject of education I would like to record my feeling of alarm at the project of a University for Burma which appears to me quite unable satisfactorily to absorb a University education.

large number of graduates. To cover Burma with unemployed or ill-paid and dissatisfied graduates appears to me directly opposed to the peace and contentment of Burma's peoples and must, in my opinion, directly lead to social and political unrest with consequent industrial difficulties and disadvantages.

In concluding my remarks on industrial education I should like to add my idea that the Burma public is shy, and almost without a public opinion, and that therefore educational spoon feeding, and the active support of her few public men, is more necessary in Burma than in the other provinces of India.

New Communications.

Transport facilities.

Communications are many times blessed ; they bless those that use them, those that make them, those that erect them, those that finance them, those that work them, those that repair them, those that find education possible through them, those that do business through them, those that find health through them, those who make wealth through them, the state which becomes conglomerate through them, society which gains liberty through them, industry and commerce which is accelerated through them, etc. etc. etc.

An Industrial Office.

Department of Industries.

I consider the creation of an Industrial Office for all India (including Burma) as of great importance. Its head should be a Member of Council with great discretionary powers, able to aid industry by bearing expenditure on reasonable experiments and to indicate and encourage new industries. He should never he handicapped by lack of funds and should not be too rule-bound, as no two industrial cases are likely to be similar. An Industrial Office, interesting itself in all affairs industrial, must pay for itself many times over and must beget a confidence amongst investers Lell worth while. A natural outcome of such an office would be that the spectacle of many firms seeking the same object, each indulging in expensive experiments, would be abolished and general information, other than patent processes, would be available for all such firms.

APPENDIX A.

School Syllabus.

Object (*1*).—To provide adequate educational equipment for the youth of Burma to commence an industrial life at the age of 14.

Object (*2*).—To break down a general aversion to manly work involving dirty kit, and to inculcate some idea of discipline and the dignity of labour.

Object (*3*).—To make sure of a supply of healthy clean-minded manly men who are also qualified and capable as school teachers.

Object (*1*)

Age 4-8.—To become thoroughly familiar with English reading, writing, and speaking and to be master of such things as multiplication and weights and measures tables.

Age 8-14 (*a*).—To be master of elementary practical arithmetic including that of familiar things such as the thrown stone, the falling stone, the difference in striking a wood and a steel wedge, the power of levers and screws, etc. etc.

(*b*) Elementary Geometry.

(*c*) Elementary Algebra.

(*d*) Very Elementary Trigonometry.

(*e*) Mensuration.

(*f*) Elementary Physics.

(*g*) Elementary Chemistry.

(*h*) English.

(*i*) Orthography.

(*j*) Simple Geography.

(*k*) History (not an examination subject).

(*l*) Physiography.

Object (*2*).

Boy scouting and games (at least several hours weekly and at least one month a year in camp at State expense).

Object (*3*).

The Local Government should build a handsomely equipped college in beautiful grounds in the best climatic part of Burma and should there train its teachers, carefully selected from suitable applicants, of ages between 16 and 19. The course should be not less than two years nor more than three years, and the entire cost should be borne by the State.

Teachers' salaries should be made attractive.

Rangoon Technical School.

Cost and maintenance entirely borne by the Rangoon Municipality.

	Pay.
Principal from Home	Rs. 800 to Rs. 1,200
Vice-Principal from Home	Rs. 700 to Rs. 900
Secretary from local teachers	Rs. 450 to Rs. 650
Remaining teachers variously from local teachers and European Engineers and draftsmen locally employed .	Rs. 100 to Rs. 300

Extra General remarks on "Questions".

Q. 7, 19 & 20.—Pioneer Factories. Under this heading I should like to place the question of "Smoke Nuisance." It appears to me that the matter is of such public interest that in Burma, where paddy and saw-dust fuel costs nothing, no one firm can be expected to eradicate the nuisance and I think it Government's business to solve the problem as suggested by the Burma Boiler Commission. When paddy husk is burnt smokelessly a great deal less of it will be used per horse power and the big remainder will have an appreciable commercial value as fuel.

Q. 38.—There is, I think, no need to alter any of the rules relating to the purchase of Government stores. The main issue is one of quality and if Indian stores are comparable with those from Home, they are, as far as I know, always purchased.

Q. 54.—I think each province should recognize each other's general certificates to the extent of granting a new certificate of similar grade (without examination) to the holder of a certificate granted by another province. I think the issue of a new certificate necessary in order that the owner should be properly registered in the new province in which he elects to work. I should also like to see all certificates bear the photograph of the owner as I am afraid there has been a traffic in certificates not bearing the owner's photograph.

Each province would of course retain its right to issue special certificates for special conditions as for instance the special certificates issued to drivers in the Burma oil fields.

Q. 89 & 90.—I think manufacturers of material used for boilers and shipbuilding should be able to obtain certificates of quality similar to those obtainable at Home from the Board of Trade. These could be issued by the Local Governments over the signature of their present trained Engineer and Ship Surveyors, or, later on, by special inspectors under the Commissioner of Industries.

Regarding the remaining questions not touched by me, it is because I have no useful information on the subjects. I am strongly of opinion that the Industrial Office, elsewhere recommended for creation, should place itself in a position to answer all such questions authoritatively, and that the Commissioner of Industry, in his discretion, and on the advice of his technical staff of experts, should not be afraid to spend both time and money if the question appears to be important.

I think all experiments carried out by the Commissioner of Industries should have their results published every six months for public information and also that any individual or firm should be at liberty to address the Commissioner on the subject of initiating such experiments without having his identity published.

(*Engineer-Lieutenant Williams did not give oral evidence.*)

Witness No. 423. *Maung Po Pe.*

Maung Po Pe, *Chairman, Central Co-operative Bank, Pakokku, Burma.*

Written Evidence.

I.—Financial aid to industrial enterprises.

Q. 5.—I think Government aid may be given to the existing or new industries by issue of loans on small interest and by guaranteed Government purchase of products for limited periods. Government assistance.

Q. 6.—The methods of Government assistance should be by issue of suitable rules and regulations for Government control or supervision and by appointment of Government directors with defined powers.

Q. 10.—By existing banking agencies and by formation of new Thamawayama banks at places away from the existing banks. Financing agencies.

Q. 10 (*a*).—Yes.

Q. 11.—Yes. The cultivators who in the past years had loans for purchase of plough, bullocks and seeds for seedling on high rates of interest have by formation of societies been Co-operative societies.

drawing advances to the amounts required on small rate of interest from co-operative banks. The reduction in rates of interest have given good results as it is known that those in the districts who have dealings with the co-operative banks are better off than the others.

Q. 12.—The industries for which co-operative societies should be encouraged are—

(*a*) Forming of commercial centres.
(*b*) Groundnut oil mills.
(*c*) Weaving.
(*d*) Financing industries with loans.

Q. 12 (*a*).—I suggest that the following State encouragement should be made for industrial development:—

(*a*) Issue of freehold lands for industrial purposes.
(*b*) By appointment of Directors for control.

Q. 14.—Yes.

II.—Technical aid to industries.

Demonstration factories.

Q. 19.—Yes, I suggest Government demonstration factories should be adopted for the following industries:—

(*a*) Weaving.
(*b*) Oil-grinding.
(*c*) Manufacturing cigarettes.
(*d*) Sugar manufacturing out of jaggery.
(*e*) To manufacture dyes out of plants the juice of which can be utilized for the purpose.
(*f*) Knitting.
(*g*) Spinning with small machineries.

III.—Assistance in marketing products.

Sales agencies.

Q. 30.—Yes. The products of cottage industries are sold through sales agencies at commercial centres. For development I suggest Thamawayama Societies should be formed at each town for the sale of these products.

Exhibitions.

Q. 30 (*a*).—Yes.

Q. 31.—The exhibition of umbrellas of the Burma industries has advanced the trade of these umbrellas which are now used throughout the country.

Q. 32.—Yes. To have exhibitions in large towns, encourage exhibitions by paying rewards and to bring purchasers of other countries in contact, should the articles be found useful in other countries.

Q. 33.—They should be popular in character and bring sellers and purchasers into contact.

Trade representatives.

Q. 34.—Yes. The representatives should be influential and respectable traders. Their duties are to follow the regulations of the Trade of Commerce.

Q. 35.—Yes.

IV.—Other forms of Government aid to industries.

Q. 42.—Concession should be given free of rent for the period the industries exist both for the establishment of new and for existing industries.

XI. - General official administration and organization.

Q. 56.—None.

Board of Industries.

Q. 57.—I recommend the introduction of motor traffic. A Board of Industries should be established and the functions of the Board should be merely advisory.

Q. 58.—By selecting experienced persons with an influential Member as its Chairman.

Director of Industries.

Q. 60.—Yes. A technical specialist should control industries and should be a reliable person.

Cottage industries.

Q. 62 (*a*).—Yes.

Q. 62 (*b*).—By establishing Thamawayama Societies.

Q. 62 (*c*).—Weaving, mat making, palm leaf *hopas*, baskets, and blacksmith cottage industries.

VIII.—Government organization for the collection and distribution of commercial intelligence.

Industrial and Trade Journals.

Q. 85.—Government should establish industrial and trade journals.

Q. 86.—Dissemination of information of this kind through the various vernaculars should be done by Government.

IX.—Other forms of Government action and organization.

Certificates of quality.

Q. 89.—Yes. Certificates should be compulsory for products for human consumption and for other products voluntary.

Q. 90.—By establishing Testing Boards consisting of experienced members for testing products and to grant certificates by Government on their reports.

Adulteration.

Q. 91.—Yes. The adulteration of cotton seed oil into groundnut oil, groundnut oil into tilseed oil, and Indian corn flour into wheat flour.

Q. 92.—By establishing Boards as suggested against Question No. 90.

Trade marks.

Q. 94.—Satisfactory.

Registration of partnerships.

Q. 96.—To introduce a system of registration is desirable.

Transport facilities.

Q. 97.—Lack of transport facilities by road hinders industrial development in the Pakokku District. A rail connection from Gangaw to Pakokku *viâ* Pauk and along the western bank of the river connecting it with Kyangin Branch would develop industry.

Q. 98.—Yes. Freight should, I consider, be reduced, and risk should be borne wholely by the railway department.

Shipping freights.

Q. 101.—Yes. I am aware that there are disadvantages as regards shipping freights as they are high and I consider the present scale should be reduced.

Q. 109.—No.

(*Maung Po Pe did not give oral evidence.*)

Mr. T. T. McCreath.

WITNESS No. 424.

MR. T. T. MCCREATH, *Joint Manager, Indo-Burma Petroleum Company, Limited (Managing Agents—Messrs. Steel Bros. & Co.), Rangoon.*

WRITTEN EVIDENCE.

Technical Aid to Industries.

Technical aid.

The only experience I have had of technical and scientific aid provided by Government to industrial enterprise is the assistance given by the Geological Survey on the development of the petroleum industry in Burma and India.

The Geological Survey discovered the Singu oilfield which is now being worked very profitably by the Burma Oil Company. The Geological Survey has since indicated other favourable areas which have been tested by ourselves and others. Their maps have been of considerable use to us in guiding our own prospecting.

Loan of experts.

I doubt if Government experts can be lent to private firms or companies without unduly benefiting one or two companies to the detriment of others. If Government experts are lent they should be lent to all companies operating at one and the same time.

Industrial Survey.

There are a great many problems in the geology of Burma which still await solution and only the Geological Survey can do any really continuous work towards their settlement. I would suggest the formation of a special Geological Survey for this province only.

Such a special survey should be made by three or four geologists who might be available, in the course of their systematic work, for consultation by the working companies.

The precise objects would be to make a deliberate and complete geological survey of Burma and a statistical study of the results at Yenangyaung and other places. Their main end would be to ensure the complete development of the mineral resources of the country on the most economical lines.

Its results should be published firstly as a continuous record of work done by means of annual reports; secondly, as special papers on economic and scientific questions, giving the results of individual researches.

Training of Supervision.

The only method available for the training of the supervising and technical staff in the oil industry is to arrange for visits to other oilfields $\frac{\text{and}}{\text{or}}$ refineries. If Government can assist in any way towards this end they would certainly be doing a great service to the industry.

Needs of oil industry.

The Geological Survey party in Burma consists of two or three men under a superintendent. Proper accommodation should be made for a resident geologist at Yenangyaung who would

confine himself to oil problems. A representative collection of Burma fossils should be available for reference, if possible, in Rangoon or Yenangyaung.

Indian Science Congress.

The Indian Science Congress is a valuable institution, in that it affords an opportunity for meeting and discussion of the technicians and scientists working in any one province. Much of the scientific work which is done by technicians employed by companies is at present buried in office files, and if the opportunities similar to those afforded by the Indian Science Congress were more general or more widely known the benefits to science might be considerable. The Congress should be brought more directly to the notice of technicians and more freely advertised than it is at present.

Research abroad.

Study leave should be granted to members of the Geological Survey with provision for travelling expenses to enable them to visit oilfields in other parts of the world.

Reference Libraries.

Our staff have constantly made great use of the Geological Survey Library at Calcutta and I would suggest that a similar library of technical works and periodicals should be available in Burma.

Government publications.

Publications of the Geological Survey have been referred to in a previous heading. These we regard as of the greatest importance. All the work of the department, even if it be purely of scientific interest, should be published in full. The work of the older surveys in the Punjab (which at the time they were published seemed of purely scientific interest only) has been very useful in guiding our prospecting in that part of India. At present I have heard that the Geological Survey does a certain amount of work which is not published. If this is so I suggest that the publications of the Geological Survey should represent all the work done in that department as fully as possible.

Assistance in Marketing Products.

Commercial Exhibitions.

Exhibitions with awards for exhibits are useful for bringing articles before the public generally and also for advertising the products of exhibitors. They foster a healthy spirit of competition and should be encouraged by Government.

Exhibitions should be held in the principal towns in the province and while exhibits be allowed from all parts I suggest that the exhibition held in a particular district should primarily encourage the products of that district by special awards for same.

Sale agencies.

As regards marketing I doubt if Government can usefully assist in this respect. Agents can be procured for the sale of any goods which are saleable and agency charges would probably be lower than Government actual working charges could be.

Museums.

I consider a museum of commercial exhibits is of value and that Government should publish a list of articles exported for use of different Government departments and also exhibit samples of these articles, with approximate prices.

Land policy.

The present Land Acquisition Act only authorizes Government to acquire land provided it can be proved that such acquisition is for the benefit of the public generally or a section of the public not connected with the persons or firm or company for whom acquisition is sought.

This is a distinct check to industrial enterprise.

(*Witness here gave confidential evidence regarding the leasing of Government land for drilling a water well.*)

My company recently wished to purchase a piece of barren land of about 4 acres at Yenangyaung for the purpose of erecting an electric power station. The land is of no value at present to owner and brings in no revenue. It is not likely to be of any value in the future as no other company wish it for a similar or other purpose. The owner asks for Rs. 2,500 per acre. Government land alongside is rented at 0-4-0 per acre per annum, yet Government cannot acquire the land in question on our account, and could not if it were the only suitable piece of land in the district.

(*Witness here gave confidential evidence regarding the Indo-Burma Petroleum Company.*)

I recommend that Government be given the power to acquire even where the public are not beneficiaries, provided that in this case owners of land are more fully recompensed than in the other case.

lining and Prospecting Rules.

Rule 30 (1). Duration of Prospecting License.

One year renewable for further two years under certain conditions.

My experience in oil mining which extends from 1908, shows that a period of 3 years is quite inadequate for the proving of an oilfield and some provision should be made in the rules whereby prospecting licenses over areas which are being tested should be renewable for so long as the active work of testing is being proceeded with.

Even after oil has been struck in one or even two wells, it is not possible to fix the actual limits or boundaries of the productive areas, and this knowledge is necessary before a mining lease can properly be applied for.

There is no purpose served in applying for an abnormally large area under mining lease to safeguard the position as under rule 45 prospecting developments elsewhere might suffer.

My company have been and are being favoured with renewals of prospecting licenses in extension of the 3 years period but nevertheless I consider that a rule such as above suggested would give more confidence to prospectors and thereby be an aid to the development of the country.

Rule 45.—Limitation of Mining Lease area to 10 square miles.

It is generally assumed that *bonâ fide* operators would receive the Local Government's support in an application to the Secretary of State for an extension over 10 square miles, provided that such a grant could be adequately worked by the applicants.

I am of opinion however that the wording of this rule should be amended to operate only in so far as it may be necessary to prevent the creation of monopolies which is apparently what the rule was intended for.

"The undernoted example shows a possible interpretation of the rule as it is worded at present and, if so interpreted, it becomes a distinct obstruction to the development of the resources of the country."

We will assume that the principal business of a company, say "A", is copper mining and it holds a mining lease over 5 square miles. Another company, say "B", is similarly interested in tin and holds a mining lease over, say, 6 square miles. "A" wishes to join "B" in a new venture, say, in oil and they are jointly prepared to take up and test an area, but this rule precludes their securing a mining lease over any area as they already hold jointly 11 square miles under mining lease.

Even if "A" and "B" only hold jointly, say, 6 square miles in their respective businesses, it is unlikely they would wish to forego their respective rights to acquiring mining leases up to 10 square miles in their principal and, we will assume, profitable businesses, by taking up a mining lease in another speculative venture.

I suggest that the Mining Lease and Prospecting License Rules for India be revised and that special provisions be made for oil as apart from other minerals. Such different minerals as oil and precious stones should not be dealt with along exactly the same lines as at present.

Other suggestions to assist development.

I suggest that it be made a definite Government order that Government officers of all grades from the sub-divisional officers upwards should give every assistance in their power to explorers and companies whose object is to develop the resources of their districts along legitimate lines. Such assistance is generally to be had for the asking but not invariably, and such a definite order as suggested above would do a great deal to simplify the relations between the explorers or companies and the departments with which they might have business. Our geologists have informed me that even members of the Geological Survey sometimes have great difficulty in securing transport and supplies and that there are cases in which the Deputy Commissioners have refused any assistance or responsibility.

(*Mr. McCreath did not give oral evidence.*)

WITNESS No. 425. *Mr. W. H. C. Prideaux.*

MR. W. H. C. PRIDEAUX, *Inspector of Factories, Burma.*

WRITTEN EVIDENCE.

Burma not entirely an agricultural province.

Before dealing with the questions asked by the Indian Industrial Commission, I wish to call attention to a "Note on Burma Industries" which has just been circulated and which, in my opinion, gives a wrong and pessimistic impression of the present industrial state of the province. People have been told so often that Burma is an agricultural province, that the fact is entirely overlooked, that there are at present 512 factories registered here, and that Bombay is the only province in India with a larger number; owing to the small size of many of the mills here the actual number of operatives is comparatively low but the number of both factories and operatives increases every year. In the last two years an alteration in the methods of preparation of rice (*i.e.*, the manufacture of par-boiled rice) has led to a very large increase in the number of Burmese women employed in the district rice mills. Burmese women are extensively employed in the cotton ginning factories but elsewhere Indian labour is made use of almost without exception; Burmans are sometimes found at work in saw mills. The table appended to this evidence shows the distribution of factories between the various classes of the community and the trades carried on. Two points to which I should like to draw attention are that, with the exception of one Burmese sugar factory, all the pioneering appears to have been done by European and Indian firms and that considering the much higher development of industry at home than in India the pioneering by European firms has been less, and that by Indians more than might have been reasonably expected.

Pioneer factories.

The extraordinary way in which the paddy boiling business has been extended in the Prome and Tharrawaddy districts chiefly by Burmans shows that this community is not so wedded to old customs as to be unwilling to break from them if a more profitable business is shown them. For this reason I think that much good would be done by Government experimental and demonstration factories. I would suggest that the Director of Industries should by means of inquiry determine what industries would be likely to be profitable, and that he should then start a factory in a suitable place. If, at the end of two or three seasons, it seemed unlikely that the business would be a success it could be closed down and the cost written off, but, if successful, young men of means desirous of starting in the industry would be allowed to work in the factory for a year in order to be trained. The introduction of one really satisfactory and new industry to the country would pay for several failures. At present there are too many rice mills and many have to remain closed for a large part of the year; fresh ones are being erected continually. It is most desirable that some other outlet should be found for capital.

Official organization.

Beyond the examination of boilers there is no assistance given to industry in this province, so far as I am aware. Since it appears likely that for many years to come the more important industries here will be closely connected with agriculture and its products, I am in favour of the formation of a post of a Director of Industries who would be subordinate to the Director of Agriculture. This officer would devote his time to industrial problems solely and I do not think a technical man is necessary since no one can be an expert on several different trades. A man with a good all-round scientific education would be most suitable for the post. Technical men trained in a special subject could be brought out on short contracts to supervise the erection and working of pioneer factories. In addition to examining what new industries appear to be promising, the Director would have power to communicate directly with British Consuls abroad or with trade representatives, if such were appointed as suggested in Question 34, and he would also supply manufacturers of machinery at Home with information as to the kinds of plant required in this country. He would also assist co-operative societies and other industrial workers to find agents for the sale of their products at Home and elsewhere.

Government assistance.

As regards direct help from Government, private experimental factories might receive land free for a term of years, and in certain cases forest duties might be remitted where a new industry in connection with forest produce was being started. I believe that in some cases firms have hung back from starting new industries owing to the fear of competitors coming in before the supply of raw material was sufficient to support two factories. In such a case the Government might have power to grant a monopoly over a certain area for a period. Under such circumstances a minimum price to be paid to cultivators for the raw material might be fixed as well.

If, as is sometimes assumed to be the case, the selling of an article costs from 50 per cent. to 100 per cent. of the actual cost of production, it would appear that an undertaking by Government to purchase goods from factories in this country would be a valuable concession to the manufacturer while—provided that the goods were as suitable for use as those produced at Home—it would have the advantage of costing Government nothing.

Advisory Board.

The question of an Advisory Board to assist the Director of Industries is a difficult one. The fact that rice and saw mills account for 427 factories out of a total of 512 seems to indicate a reluctance on the part of capital in this country to experiment. In some cases the articles of association may prevent firms from beginning new trades, but I think that at the bottom of everything is a feeling that what is being done now pays very well and that it is not worth while to branch out into something new, which may or may not prove remunerative. Moreover, I understand, but I speak subject to correction by gentlemen with fuller knowledge, that the remuneration of the Rangoon heads of the large firms depends on the profits earned while in charge out here. It seems to me that this must have a tendency to make men in authority unwilling to expend money on experiments which may diminish the present profits even if in the end these experiments might be expected to lead to a paying industry. Assuming the above to be correct it would appear that these circumstances might produce such a habit of mind in those gentlemen who would be most likely to be selected to the Advisory Board as to render them somewhat pessimistic and likely to throw cold water on any scheme put forward by the Director, and this should, I think, be avoided.

(*Witness here gave confidential evidence regarding the acquisition of land.*)

Transport facilities.

I have no doubt that many witnesses will draw attention to the lack of transport in this province as a hindrance to development and I propose to touch on one point only. The inland navigation of this country is almost entirely in the hands of one important company. Some years ago a River Transport Company was started to run in opposition to them and from time to time small Burmese and Chinese firms start running launches between towns on the various waterways. The River Transport Company expired before I came out here and I am not acquainted with its history, but in many of the other cases the opposition has been broken down by cutting fares to a ruinous extent and running launches immediately before and after the opposition launch. It does not appear desirable that this monopoly should be allowed to continue and I would suggest that Government should take powers to fix minimum

rates for goods and passengers and to fix times for sailings when in its opinion such a course is necessary in the public interest.

Class of Factories.	European.	Burman.	Chetty.	Indians other than Chetty.	Chinese.	Total.
Rice Mills	49	159	10	56	44	318
Saw Mills	14	28	18	31	18	109
Oil Mills (groundnuts)	1	4	...	5†	5	15
Engineering Works	17	1	...	2	...	20
Cotton Ginning factories	2	2	...	9	1	14*
Sugar Factories	...	1	...	...	...	1
Match Factories	1	...	...	...	1	2
Ice Factories	2	1	...	1	...	4
Rope Factories	...	...	...	2	...	2
Flour Mills	...	...	...	2	..	2
Petroleum Works	11	...	..	...	...	11
Chemical Works	1	...	...	...	...	1
Tobacco Factories	1	...	...	...	...	1
Bone Factories	1	...	...	...	...	1
Distilleries	1	...	...	...	...	1
Dye Works	...	...	...	1	...	1
Printing Presses	5	...	...	1	...	6
Tile Works	1	...	...	...	...	1
Rubber Factories	1	...	...	...	...	1
Soap Factory	...	...	...	1	...	1
Total	108	196	28	111	69	512

* At several of these cotton seed oil and groundnut oil are prepared.
† Two of these have flour mills.

Supplementary Written Evidence.

Note on the Boiler and Prime-mover Acts.

It seems desirable that these Acts should be under a central control for the following reasons :—

The Acts may be divided into two parts: one relating to the inspection of boilers and the other to the licensing of engineers and engine-drivers. As far as the first part goes there does not seem to be any reason why boilers in different parts of India should be subject to different rules; if a boiler is unsafe in Bombay it is equally unsafe in any other province. Moreover it would be a convenience to importers to have uniform regulations so that any boiler could be sold anywhere without having to trouble about local rules. An examination of the present Acts and Rules shews that the Provinces do not at present agree as to what constitutes a boiler or a prime-mover, and this might be changed with advantage.

The second part deals with the certification of engineers and engine-drivers. Here again it seems that a qualified man ought to be able to obtain employment anywhere without having to sit for a fresh examination. I think that this has been recognised recently for engineers under the Inland Steam Navigation Act, and these certificates are available all over India. This involves uniformity in the rules relating to the practical experience required from candidates and in the examinations themselves. This indicates again that the rule-making and possibly the examining authority should be with the Government of India. In any case there would have to be local examiners for the oral part of the examination even if the written work was sent to the Central Authority.

In this province three classes of certificates are granted, and before criticising the rules one may inquire what duties the holder of a certificate may be expected to perform.

In the lowest grade—that of engine-driver—the name explains itself. Nothing beyond a practical knowledge of the working of engines and boilers can be expected and the rules are if anything too stringent. A man employed as a fireman for less than five years would be

quite competent to act as an engine-driver, and if he has obtained a certificate from a recognised technical institute after three years' instruction, etc., the examination is unnecessary.

There are two grades of engineers, first and second class. The latter may be in control of any number of engines and boilers belonging to the same owner, provided they are situated within a radius of 500 feet. This limit does not apply to a first class engineer which is a little illogical as the certificate does not enable him to be in two places at once. Power may also be given to a first class engineer to examine and report on a boiler, and this report is accepted in place of a Government inspection for licensing purposes.

A good deal more should be required from an engineer than from an engine-driver. His employer will expect him to advise on working the mill and keeping it efficient. For this reason I think that certificates based on sea or river service only should not be granted as provided for in Rule 67, and an elementary knowledge of electricity and of the transmission of power by belts and gearing should be added to the list of subjects in Rule 77. The five hundred feet limit should be done away with, and also the power to report on boilers for licensing purposes at present possessed by first class engineers. The latter is most objectionable. If this were done the actual powers of first and second class engineers become identical and the only advantage of obtaining a first class certificate would be evidence of greater knowledge of the science which the holder possessed. It would in fact be similar to the extra first class of the Board of Trade, and as his work would be on land, marine certificates should not be recognised as entitling the owner to a land certificate. The syllabus of subjects would have to be revised to bring the examination more into accord with land practice.

Attention was called by the Public Services Commission to the objection to having representatives of boiler owners on the body responsible for the administration of the Act. The individual interests are sufficiently protected by technical assessors sitting with a magistrate to hear appeals.

ORAL EVIDENCE, 23RD JANUARY 1918.

Mr. C. E. Low.—*Q.* Is the up-country manufacture of par-boiled rice seasonal or continuous?—*A.* It is seasonal. It does not go on throughout the whole year but it is spread over a part—for about seven or eight months.

Q. Where does the labour come from?—*A.* Up-country, chiefly Burmese come. They come from the surrounding villages.

Q. Are they employed on agriculture the rest of the year or what?—*A.* I made enquiries, and so far as I can make out, some of them are engaged in agriculture and some of them do nothing the rest of the time.

Q. What are the wages?—*A.* Six annas a day approximately, sometimes a little more and sometimes a little less.

Q. There is not much Indian labour up-country?—*A.* There is no Indian labour on boiled rice manufacture up the Prome line. Between Pegu and Moulmein and Rangoon it is almost entirely Indian labour on boiled rice.

Q. And on other rice?—*A.* It is almost all Indian labour everywhere.

Q. And what wages do they get?—*A.* About eight annas a day.

Q. Are these boiled rice mills factories under the Act?—*A.* Yes. The Act in this province applies to all factories in which more than twenty persons are employed.

Q. Do you have much difficulty about the employment of women for too long hours?—*A.* No. Their work scarcely comes under the Act. It is not inside the factory itself.

Q. What about the employment of children? Are there many?—*A.* Practically none.

Q. What does the supervising staff of these rice mills consist of?—*A.* There does not seem to be any. There is the owner who usually looks after the whole thing. He is not an expert in rice milling, and there is no staff to run it.

Q. Is the mill run on paddy husk or wood charcoal?—*A.* All the paddy mills are run on paddy husk.

Q. Where do these certificated engineers who are in charge of the boilers come from?—*A.* The majority of the small mills have engine drivers.

Q. Third class?—*A.* They are called engine drivers.

Q. What corresponds to the third class certificate in other provinces?—*A.* I think so.

Q. That is the lowest kind of recognised boiler mechanic?—*A.* You cannot look upon them as mechanics.

Q. They can drive the engine?—*A.* Yes. That is all they can do.

Q. Who are they? Are they Burmese?—*A.* I should say there are not more than half a dozen Burman drivers in the province. When a Burman takes up that kind of work he generally manages to get a second class certificate. The Burman does not very much like doing the same work as Indians. The Burman would think that it would not be quite a proper thing to do the work which an ordinary engine driver does. There is a certain amount of that sort of dislike on the part of the Burman.

Q. Where do the Burman certificated mechanics come from?—*A.* There are some engineering shops in Burma and they get their training there chiefly.

Q. Railway workshops or private shops?—*A.* Bullock Brothers have a large engineering works and they go there. There is a comparatively small place in Bassein in which there are several apprentices. Some of them come from there and some from the Railway shops.

Q. You know, of course, that a comparatively large proportion of men with mechanical knowledge in India have had their training in the Railway workshops?—*A.* No doubt some of them are trained in the railway works here, but I think most of them are trained in the general engineering works. In any case there are comparatively very few engineers who have been trained in the country at all.

Q. You do not have any Government institution which trains 1st and 2nd class certificated engineers?—*A.* There is an engineering school at Insein and I believe there is some arrangement between that school and the Boiler Commission, that so many years' instruction counts. I do not know the details. I believe there is some such system The Boiler Commission may be able to give more information on that point.

Q. Is the question of housing labour in Rangoon or in any of the other large towns acute?—*A.* No. It is in the small mills scattered about in the jungles. Where there are municipalities, housing is fairly good. Where there are mills dotted along in the delta, housing accommodation is frequently very poor.

Q. The state of affairs in India in organised industries is practically this, that, if an industry is started in the country away from any town of any size at all, employers more or less largely by force of circumstances put up accommodation, and if it is a decent industry very good accommodation too.—*A.* The Burma Railways have just started a new town not very far from Mandalay. They have got excellent accommodation for work-people there. I think in the case of small rice mills where they employ 40 or 50 people the houses in which the coolies live are not good.

Q. They are worse than in their own villages?—*A.* I would not like to say that.

Q. In Rangoon, for instance, is there congestion, overcrowding and so on?—*A.* No.

Q. Are there many lodgers in a ten feet square room?—*A.* It is difficult to say how many people are living in one room. There is plenty of accommodation in the factory premises for these people, but sometimes they overcrowd.

Q. Are the houses put up by the firms who employ large quantities of labour? Do they put up buildings for operatives, or do the operatives live in the ordinary houses put up by outsiders?—*A.* In Moulmein the operatives live in privately owned houses. In all the other towns with very few exceptions—very few of them may live out,—nearly all live in accommodation provided by the employers.

Q. On the employer's premises?—*A.* Yes. Quite close to the mill. Occasionally a little further away.

Q. Is there a relatively low or high proportion of female labour employed in these Rangoon factories here?—*A.* Very little indeed. If there are 50 male coolies you may see 3 or 4 females.

Hon'ble Sir R. N. Mookerjee.—*Q.* The houses are built by the factory owners?—*A.* By the factory owners except in Moulmein.

Q. What is it in Rangoon?—*A.* The factory owners supply accommodation.

Q. Do they build houses or hire houses for them?—*A.* They are in their compound.

Mr. A. Chatterton.—*Q.* They build a sort of barracks in each compound in Rangoon?—*A.* Yes.

Q. And the men are practically all single men and they live so many in a room?—*A.* That is the idea.

Q. And these are all under whose inspection?—*A.* In the municipalities, the municipalities inspect them.

Q. Do you inspect them?—*A.* No. I do not myself take any action when I find crowding, but I report to the municipality. I do not take any direct action.

Q. I saw some of these barracks in connextion with the saw mills this morning and they struck me as particularly clean. Is that the general character of the housing accommodation which is provided in Rangoon?—*A.* I do not think housing accommodation is at all bad in Rangoon I have no experience of Indian factories.

To the President.—These factories are under my control, and also under the control of the municipality, but as it is undesirable to have dual control over these I do not take any action directly but I report the matter to the municipality.

Mr. C. E. Low.—*Q.* Have you any statutory powers in connection with housing, or is it merely an administrative question?—*A.* They are considered as forming part of the factory.

Mr. A. Chhatterton.—*Q.* They live 30 or 40 in a room?—*A.* Sometimes they have long rooms where they all live together and in some other places they are divided into compartments.

Q. It is very much like military barracks?—*A.* In Upper Burma you have small mat houses where Burmese live.

Q. Are these imported coolies? The Burmese have separate houses?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.* Has the municipality any rules as to the area that each man is to occupy?—*A.* There are regulations about the space, ventilation, and accommodation.

Q. Is there any inspector to see how many people live in one house?—*A.* If there are very many people I suppose the municipality will see that its conditions are complied with.

Mr. A. Chatterton.—*Q.* The men pay no rent?—*A.* No. Not actually.

Mr. C. E. Low.—*Q.* At the beginning of your note you call attention to a "Note on Burma Industries." What is the note about? I have not seen it.

(*Hon'ble Mr. Thompson* explained that it was a note written by Mr. Morris giving an account of the present position of the various industries in Burma. It was circulated for the assistance of witnesses who wished to give replies to the several questions sent to them. It was not a note expressing any opinions of any kind, but merely gave an account chiefly of local industries so that witnesses might have such information as Government could give them to assist them in answering the questions.)

Q. Turning to this question of engineer certificates again, you consider that the system of engineer certificates should be maintained, but they should be homogeneous and interchangeable, and the same thing with regard to boiler certificates. In certain provinces, for instance, Bengal and Madras, there is no system of licensing engineers, and the Bengal Inspector of Factories has told us that he had no more accidents than anywhere else, in fact rather less. Do you think the idea of engineer certificates is necessary at all?—*A.* You can look at the engineer certificates from two points of view. One is the safety point of view, and it certainly does seem probable that accidents are less likely to occur in provinces in which the man has been trained than elsewhere. There is also another point. A great many small millowners in this country have no engineering knowledge at all and are not really in a position to form an opinion whether the man whom they wish to employ is an engineer who could look after their mill, whether he is suitable or not, whether he has any experience or not, and I think that the system of licensing or certifying engineers is probably of assistance in that way.

Q. There is another point of view which has been put to us by some who have had personal experience of it that the 3rd-grade engineer, or engine-driver especially, has to be paid an artificially high wage because of the existence of this system of certificate, that the Bengal engine-driver is just as good or as bad a man, but that he can be had cheaper because there is no necessity for him to take a certificate?—*A.* It is to give the factory-owner some idea as to the experience and training the man has had. This will apply equally to all classes of engineers.

Q. If a man has a factory which is big enough to require the certificate of a 1st or 2nd-class engineer he must have knowledge, either himself or have access to knowledge, which will enable him to make up his mind as to whether the man is worth to be employed or not?—*A.* Yes; I am not quite sure they always have. Some of these mills are in the hands of persons who have no knowledge of the business at all. I am not thinking so much about the large European firms who are quite big enough to look after themselves, but I am thinking about the small Burmese millers.

Q. You are in favour of the formation of the post of Director of Industries who would be subordinate to the Director of Agriculture. What is your reason for thinking that he should be subordinate to the Director of Agriculture, instead of parallel?—*A.* I think you get more co-ordination in that way. I am not a believer in the multiplication of departments, but I would concentrate, as far as possible, in one department. The industries in this province, except mining, are very closely dependent on agriculture.

Q. The Director of Industries would be concerned with questions of commercial and industrial intelligence, of local purchase of stores, and assisting in starting new propositions?—*A.* That point particularly would be closely connected with agriculture.

Q. Are there not other ways of co-ordinating beyond merely subordinating?—*A.* I think that is the best way. I think that is the most satisfactory way.

Q. Don't you think the Director of Industries should be a man of fairly good status and position, much like the Director of Agriculture?—*A.* Any work requiring communications with Consuls abroad would be carried on in the name of the Director of Agriculture.

Q. After all, that is a very small part of his work. Supposing you have a fairly large scheme for putting up small power plant for pumping and things of that sort, supposing there is a question of assisting factories like match factories, and so on, presumably the Director of Industries would be the man with a technical department under him whom you would look to?—*A.* Yes; but still so many industries in this country depend upon the utilization of agricultural products that I think it is desirable that they should all be under one department. Take the question of Banana fibre. That is a most promising industry and you must have the Agricultural Department working out the improved plant for fibre, selecting which plant is suitable, and the Industrial Department working out the machinery for preparing fibre.

Q. Why do you consider that the mining department should be kept apart from industries?—A. I did not say that.

Q. You said just now that, apart from mining, his main business would be industries allied with agriculture. Would not mining be an important sphere of his work?—A. It would be. There might almost be a special mining man. I have not thought about it.

Q. Is it not just as important to keep cottage industries in touch with co-operative credit as to keep in touch with agriculture?—A. I think so. That is the intention at present; to keep the Director of Agriculture very closely connected with the co-operative department.

Q. How would you do that by means of subordination? Don't you want parallel co-ordination for that purpose, rather than putting one under the other?—A. Personally I would rather have subordination than parallel co-ordination. I believe that you should have one man who will be able to secure co-ordination. There is always jealousy springing up when you have three parallel departments.

Mr. A. Chatterton.—Q. I understand that the list of factories which is appended to your note is a list of factories employing more than 20 hands?—A. Yes.

Q. Are there many rice mills which do not come under this classification.—A. Practically 30 or 40 in the whole conntry, not more.

Q. That is the very outside figure?—A. It includes nearly all.

Q. What type of machinery do they employ in the small mills?—A. Some of them are big mills in miniature, but others have self-contained plant which the Germans pushed into the country.

Q. In any of these small mills do they use oil or gas engines?—A. I only know two or three where they use them. They get paddy husk free and they burn it in the boiler. If you use oil you have got to buy kerosene oil.

Q. The small amount of paddy husk is not sufficient to drive the plant especially on the Engleberg system?—A. I have never found it insufficient, except on boiled rice. They found it difficult to work on boiled rice only and they used to do a certain amount of boiled rice and a certain amount of ordinary rice. When they used it on boiled rice alone they did not find it sufficient.

Q. Are oil engines used in Burma?—A. In cotton-ginning.

Q. In the factories which are included in this list which you have furnished us we may take it that the great bulk of them are steam plant?—A. The great bulk.

Q. Dealing with these smaller plant, and not the large European plant, in what sort of condition do they keep their machinery?—A. It turns out rice all right. The whole thing is shaking about. It depends upon the building itself. The German plant and machinery is mounted on girders separate from the walls, but the ordinary plant and machinery are attached to the main posts of the building and the whole building shakes about. I think, considering everything, it is rather wonderful how good the foundations are. They do not seem to have trouble about it.

Q. Before the war were many of these rice mills fitted up with German machinery?—A. Yes; it was coming in largely.

Q. And, as regards saw mills, had the Germans any business in that direction, or was it all British machinery?—A. All British, I think there are a few American saws. The machinery on the oilfields is chiefly American.

Q. Does this list of factories include the oilfields?—A. No. Only refineries.

Q. Do you inspect the plant on the oilfields?—A. No. They have a few workshops and I inspect them. I do not inspect the machinery in connection with the wells. All the boilers and engines on the oilfields are under the Boiler Act under the Inspector of Boilers.

Q. In reference to your suggestion that the Director of Industries should be subordinate to the Director of Agriculture, what do you think should be the qualification of the Director of Industries? Should he be an engineer, or a business man or an administrative officer?—A. It is desirable that he should know very many different things and have had a wider experience in many directions. It is probably impossible to find a man possessing all the qualification which might be useful to a Director. I think it would be better to get a man who is keen on the development of the country and tactful. I think that is more important than engineering knowledge or business experience although both of them are very valuable.

Q. Do you think that a man without any special qualifications, such as you propose the Director of Industries should be, would be a useful adviser to the Director of Agriculture?—A. I think he would study the subject. I think he ought to be on that job permanently.

Q. What subjects do you think he should study?—A. He ought to go about the country and make enquiries as to what use is being made of any indigenous products on a very small scale, and then to see whether that small scale is capable of becoming large.

Q. He will deal with cottage industries?—A. He will try to form them into large industries.

Q. Take the one that seems to be a matter of some importance now. Take the question of the utilisation of waste paddy husk?—*A.* That I think is a subject for an expert in all probability.

Q. You will get out a man from home as a chemist to be put upon a job like that?—*A.* I do not think that particular job is promising, but in similar cases I would.

Q. If you have a man without any technical qualifications and subordinate to the Director of Agriculture, don't you think that it is probable that a great many very promising propositions might entirely escape his notice?—*A.* I think it is probable that a great many might escape his notice, but he will probably find a good many on which he could work. This country is abundant with propositions. The man should have so many different qualifications that all of them cannot be found in one man.

Sir D. J. Tata.—*Q.* I do not quite follow the answer that you gave to Mr. Chatterton just now with reference to this paragraph, I do not quite understand its meaning: "If, as is sometimes assumed to be the case, the selling of an article costs from 50 per cent. to 100 per cent. of the actual cost of production it would appear that an undertaking by Government to purchase goods from factories in this country would be a valuable concession to the manufacturer while—provided that the goods were as suitable for use as those produced at home—it would have the advantage of costing Government nothing?"—*A.* Supposing Government wants to buy a certain article and the price of imported article is one rupee and you can buy the same manufactured in this country for one rupee, it does not matter to Government whether it buys the imported article or the local one, but it will be of value to the Indian manufacturer.

Q. What do you mean by "The selling of an article costs from 50 per cent. to 100 per cent. of the actual cost of production?"—*A.* The cost of selling to the public includes the cost of advertising and commercial agents and all that. If your article can be profitably manufactured for a rupee the actual cost to the public may be two rupees owing to the charges which have to be borne by the article on account of advertisements and travellers' charges and the other expenses in connection with retail sale. If Government purchased an article of this type direct from the makers at the open market price of two rupees, Government would be paying no more than at present while the maker would be getting a high rate of profit.

Q. In the first part of your opening sentence you say: "People have been told so often that Burma is an agricultural province that the fact is entirely overlooked that there are at present 512 factories registered here." Have you any idea of the capital employed in agriculture and the capital employed in these factories?—*A.* No. Land is chiefly Government land I believe.

Q. Have you formed any idea of the relative importance of these two—how much capital is employed in the one and how much in the other?—*A.* I have no idea. Agriculture is far and away the biggest industry.

Q. The mere fact that there are 512 factories does not help us in forming an idea, because the capital employed in them may be comparatively very little?—*A.* It is possible.

Q. There is one more question that I should like to ask you. You say in connection with pioneer factories, "But, if successful, young men of means desirous of starting in the industry would be allowed to work in the factory for a year in order to be trained." Is there any desire on the part of the Burman to go in for industrial work of this kind and to be trained? Would he apply himself, and would he work with his hands?—*A.* Yes. There is no reason why he should not.

Q. There is no difficulty here in making the Burmese to take up manual work; to take to industries where they have to work themselves?—*A.* I think they would be willing to do that. They make good engineers.

Sir F. H. Stewart.—*Q.* Is most of the land on which labour is housed round Rangoon within municipal limits?—*A.* Nearly all.

Q. Has there been any difficulty between the employers and the municipality as to the terms on which land is leased out for housing labour?—*A.* The land belongs to the employers usually.

Q. Do the employers sometimes consider the municipal regulations harsh?—*A.* No doubt they do. That occurs in all municipalities all over the world.

Q. You do not think there is anything particular in that complaint?—*A.* I do not think so.

Q. You think the municipal regulations are reasonable?—*A.* Yes.

Q. You consider housing conditions round here are satisfactory?—*A.* Yes.

Q. Who are the body responsible for the administration of the Boiler and Prime Movers Act?—*A.* The Burma Boiler Commission.

Q. Under which you are the executive authority?—*A.* I have nothing to do with it. The District Magistrate of Rangoon is its Chairman.

Q. And I suppose there are representatives of the mills, and other people on it?—*A.* They consist of the District Magistrate of Rangoon as the Chairman, the Marine Engineer to Government as Secretary and executive member, and three others who are engineers of firms or members of firms.

(*Witness here gave confidential evidence.*)

Mr. C. E. Low.—*Q.* Has there been any other attempt at river transport besides the Irrawaddy Flotilla Company?—*A.* Yes. There have been a lot of small Burmese and Chinese launch owners.

Q. They have all proved a failure?—*A.* I know one or two launches running up and down a part of the delta now.

Q. Do those small concerns constitute serious competition?—*A.* No serious competition.

Q. And is there any agreement between them about rates?—*A.* None that I have heard of.

Q. How are rates by river and rail if you compare them?—*A.* I do not know. The Chamber of Commerce will tell you. I have heard complaints of high rates from the Railway.

Q. Is the Railway at all a very serious competitor with the river transport? Does it tend to keep rates down?—*A.* Myingyan, Prome and Mandalay are practically the only towns that are served by boat. There are a few more. Between Rangoon and Mandalay, Myingyan is the only station on the river which is served by both railway and river. They do not touch much. Mandalay to Rangoon is the only real length where there is competition.

Q. And there are not many railways in the delta?—*A.* None whatever.

Q. Is rice sent from Mandalay to Rangoon?—*A.* Milled rice, and not paddy.

Q. Is there any competition for transport of goods between Mandalay to Rangoon between the railway and river transport?—*A.* There is a certain amount.

Q. Are the existing steamer rates too high in your opinion, or before the war were they too high?—*A.* I could* not say. You may get more information from the Chamber of Commerce.

(*Witness here gave confidential evidence.*)

Witness subsequently submitted the following supplementary note.

The rates for freight between Rangoon and Mandalay are shown in the following table, extracted from the published schedules of the Irrawaddy Flotilla Company, Limited. It is stated that the rates refer to "Goods by weight or by measurement at carrier's option per ton of 20 cwt. or 50 cubic feet." The distance of the stations from Rangoon in miles is shown in the second column. Stations served by both the Railway and the river are shown in *italics*. Attention is invited to the jump in the rates between Prome and Thayetmyo.

A table extracted from the schedules published by Messrs. the Irrawaddy Flotilla Company, Limited.

Stations.	Miles from Rangoon.	Freight rates.	Remarks.
Rangoon to—		Rs. A.	
Ma-ubin	106	6 0	
Yandoon	136	6 0	
Danubyu	152	6 0	
Henzada	*196*	*6 0*	
Myanaung	*256*	*7 8*	
Prome	*311*	*6 0*	
Thayetmyo	355	12 0	
Minhla	403	13 8	
Magwe	420	13 8	
Minbu	423	13 8	
Yenangyaung	458	13 8	
Sinbyugyun	483	13 8	
Salemyo	508	13 8	
Pagan	563	13 8	
Pakokku	583	15 0	
Myingyan	*618*	15 0	
Mandalay	*708*	1 0	

* See supplementary note.

WITNESS No. 426.

MR. H. L. ALLAN, *Assistant Works Manager, the Burma Oil Company, Limited, Rangoon.*

WRITTEN EVIDENCE.

Technical aid to industries.

Technical aid in general.

In the refining of petroleum in Burma there has not been any aid of a technical or scientific nature afforded by Government or, on the other hand, sought by the refining companies. I do not think that such aid could be arranged, because an expert, of any real value, would command a much better salary and prospect in private employment than Government could possibly offer.

I have had no experience of any aid afforded by the Scientific and Technical Department of the Imperial Institute, but have derived, personally, great benefit from the bulletins of the work done in the laboratories of the American Bureau of Mines.

I am of opinion that much valuable research work could be done in Burma in a properly equipped technical institute on the lines adopted in various American technical and scientific colleges. Such an institute would, for instance, embrace Mining, Mineralogy and Metallurgy, Agricultural Chemistry, the Chemistry of the Forestry Department, Petroleum, etc., and the various branches of Engineering and Chemical Engineering as found necessary. With able men directing the research department, it should not be difficult to obtain grants for research scholarships from the large manufacturing concerns in Burma for research in connection with their respective industries. Such grants are very common in the United States of America and have been of great advantage to all parties concerned. The proprietary rights in all discoveries or inventions are held by the donors of the scholarships concerned for a period of five years or such further term the governors of the institutes may consider necessary and equitable, the results can then be published as the said governors may direct. The student participates according to the value of his research.

The Burman Assistant Chemists, whom the Burma Oil Company have employed to date, are not sufficiently advanced to undertake this work even under very skilled direction, but the Burma Oil Company have not been able to get the best of the Rangoon College students, as the latter prefer Government service (Forestry) which so far offers better terms than the Burma Oil Company have done and has the additional inducement of pension or provident fund and a better social position. The latter especially carries great weight with the Burman. I consider, however, that a post-graduate course, including the holding of a research scholarship, ought to fit the Burman to compete with the European in the scientific side of industry. The Government departments can only take a limited number of recruits yearly and the balance would be more willing to accept the remuneration offered by a commercial life as the number qualified to do so increases. Again the commercial and manufacturing firms requiring scientific assistance would no doubt pay larger salaries when they are assured that value can be obtained; at present they can obtain well trained Europeans for very little more than the educated Burman demands and the former has much better control over labour.

Research abroad.

Advantages.

I presume that research abroad would mean London or other of the large cities and would be conducted in one or other of the technical institutes. The advantage is, that very highly trained men can be obtained to do the work there at much less remuneration than they would require abroad and their energies are not sapped by the climate. The advantages in library resources are overwhelming, and in many other respects, such as the designing and manufacture of special apparatus, dictated by research; the experience, craftsmanship and plant are to hand saving time and the breaking of the train of thought, which, waiting for apparatus or material entails.

Disadvantages.

In London and possibly in other cities legislation forbids the storage within Municipal boundaries of large quantities of material such as petroleum. As large quantities are required for technical research, this is a handicap. It is also desirable to conduct the research in the climate in which manufacture is to be conducted or that those conducting the research should have knowledge of the conditions, climate, labour, etc., under which their processes or plants will require to be operated. The disadvantages do not, in my opinion, discount the advantages.

Assistance in marketing products.

This does not come within my province, but I suggest that in colleges and schools or technical institutes, the various manufactured products produced in India and Burma be shown, the firm manufacturing to gift the cases and exhibits and copies of a small brochure describing the process of manufacture and the uses and application of the products. This is done in certain educational institutions in Britain, and I have noticed, on many occasions, its advantages to manufacturer and consumer.

Training of labour and supervision.

Lack of primary education is a very great hindrance to industrial development: the education required, in my opinion, is sanitation, the three R's and practical workshop instruction. The former is essential before progress can be made, the latter would tend to inspire an intelligent interest in manual labour and pride in its successful accomplishment. One notices this lack in plant controlled by the native where machines have bright parts, they are neglected or painted at the first opportunity. They are careless with tools and do a great deal of damage by their primitive methods of overcoming temporary difficulties. Where a a native of India has attracted more than the ordinary attention of his European supervisor and the latter has given a little extra attention and instruction to him, I have noticed very marked improvement for comparatively little effort on the instructor's part. Lack of primary education.

Vernacular schools have, in the neighbourhood of the refineries of the Burma Oil Company, taught a few men who saw advancement in a slight knowledge of figures, simple addition and subtraction, but the recipients of this instruction learn just enough for that purpose and are, in general, too old for further education, otherwise nothing has been done to improve the labourer's efficiency and skill beyond the reward of advancement at their work.

Education in simple sanitation and mode of cooking and living, simple elementary education, reading, writing, arithmetic and practical training are required.

Better housing conditions are necessary, and this should not be exacted from the employer; it is not appreciated. I have the experience, with such labour as the Burma Oil Company house, that they will do nothing to improve sanitary conditions and are very destructive of house property. Low standard of comfort.

Of our own employees, the bulk send, at least, half their earnings to support homes and families in India; the result is a poor class of house in the neighbouring village or municipality, low rateable values and no money for municipal development. Recently the Burma Oil Company built barracks at a cost of Rs. 1,20,000 to accommodate 2,000 coolies, charging 12 annas per month per head with copious water supply, septic tank latrines, cooking accommodation, etc.: after two years there are about 700 living there, the bulk are living within municipal boundaries in *dunny* huts with mud floors and surface drainage water supply for all domestic needs, rent As. 8 per month. They prefer such contaminated water to artesian well water because the latter has no taste (*verb sap*). The only remedy I see here is the encouragement of imported labour to make their homes and bring their families here. Such encouragement would take the form of cheap land with garden plots and encouragement to labour to become householders. I quite see the difficulty of accomplishing this: it means large areas for sanitation, water supply and policing, but it seems to me the best remedy.

Apprentices are trained in Burma Oil Company mechanical workshops; they develop into quite satisfactory fitters but have neither technical knowledge, training, nor the elementary education to take advantage of the latter if it were available. Apprentice system.

The Burma Oil Company are employing gradually better class Anglo-Indians as shift engineers and find them, on the whole, satisfactory. They are not fitted for the superior posts and do not control labour as efficiently as the European although they have an advantage over the latter in their knowledge of Indian languages.

I have not had experience of night schools for short-time employees and, with the exception of a vernacular one, such do not exist in Syriam or the District. I am not aware of any in Rangoon but, if such were established, their certificates would be of considerable value to employers in estimating the value of employees or candidates for employment. Night-schools.

I have recently had several applications from clerks, who wished to learn short-hand and typewriting, that they may be allowed leave to go to Rangoon tutors for the purpose. These applications have been granted and advances from salaries made to pay fees. In each case it meant a loss to the Burma Oil Company of half a day for each lesson. Night schools in the neighbourhood would render such loss unnecessary and would encourage larger numbers to improve their knowledge.

There are several schools in the neighbourhood of the Refineries which, if liberally supported by Government, could, I think, easily run night classes: these schools are run by Missions of various denominations. This would be the least expensive method of initiation of such a scheme and would afford data, in the shortest time, of the likelihood of a more elaborate system being appreciated or necessary.

I am of opinion that, in the event of Government giving grants-in-aid to such schools for the development of night classes in commercial and industrial subjects, that control be exercised by a Department of Industry: the latter, being in touch with industrial requirements, would be more sympathetic of such requirements and, therefore, better able to advise on the subjects and methods of instruction.

The night schools should be quite distinct from the day-schools as in many parts of Scotland, the teachers being paid per lecture or attendance whether they are on the day staff or not. The night schools simply use the schools and fittings (certain classes drawing monthly salaries of Rs. 50 and over would, of course, pay for instruction, clerks, mechanics, etc.).

Supervisors and Managers.

In petroleum refining, supervisors and skilled managers are all Europeans, trained in Europe; their training is usually general, whether in chemistry or engineering and in most cases their knowledge of refining and petroleum in general is gained here. The general training and experience in manufacture at home, not necessarily in petroleum or allied industries, is indispensable and our experience is that the training gained subsequent to University or technical college for, say, two or three years in a home factory, more than doubles a man's value.

The Anglo-Indian or native of India is not yet able to compete with the European for these posts and, in my opinion, will not do so for a long time yet. They are not so self-reliant, dependable in emergencies, and have seldom any initiative. Further, they have many undesirable habits, not peculiar to India, but more marked here than at Home, of which the most reprehensible is the exaction of money from subordinates and the consequent lack of control or the proper kind of influence over the latter.

Government could give very valuable aid to supervisors, managers and technical experts to study conditions and methods in other countries by accrediting such to their consulates, embassies or any organization instituted before or after the war for the furtherance of Empire trade. I spent seven months in Germany, Galicia, Roumania and Austria before the war studying petroleum refining in these countries. They were very much more advanced in their methods than we are here or in America, especially in the Austrian State refineries. We are rapidly overtaking them and would, probably, have been up to their standard but for the difficulty of obtaining new plant and material during the war. Their labour is much superior, one man being equal to six here and sometimes to ten. They had the great advantage when building their refineries of building for a definite output and therefore erected units of great capacity whereas we have a large number of units added from time to time as the business developed.

I consider the advantages of such tours in other countries of inestimable value and more especially for men employed in India. The feeling here is that one gets out of touch and such a tour makes one realise how much this is so.

Mechanical Engineers.

There is no lack of uniformity in the standard of examinations in this province, in my experience.

General official administration and organisation.

I have no experience justifying comments under this heading, but I have no doubt that a Board of Industries would more than justify its existence and am of opinion that it would be difficult to find a Director of Industries who would, in his own person, be able to advise on both the business and technical side and therefore believe that a Board of Advisers with an official Director or President would be the better method.

Organisation of Technical and Scientific Departments of Government.

Technological Institutions for Burma.

There is no scientific or technical department in this province which can advise in petroleum refining and the only department which could do so efficiently would be a technological institution capable of conducting research and advising on new products to be obtained or new applications of such or existing products.

Such an institution would at the same time train the men required for the development of industry.

There is, for instance, a probability of materials for dyes and high explosives, etc., being obtained economically from petroleum but such development will be impossible without a plentiful supply of skilled labour such as a technological institute or college would produce. I think Burma with its vast resources would justify the establishment of such an institution of its own because with the development of its communications, there will be large numbers of new industries requiring technical assistance and India is too far away to be of such assistance as will be required.

Reference libraries.

For my profession, literature of any value is unobtainable in local libraries. As it is a specialised subject appealing to a limited number and as the books go out of date very quickly, it is perhaps impossible to expect libraries to have such on their shelves but with a technical college or technological institute such books would be necessary. It would be a great advantage if copies of patent specifications and bulletins of special subjects issued by industrial bureaus and laboratories of allied and foreign countries could be consulted in reference libraries; these afford much more up-to-date and useful information than the bulk of books or works of reference.

Colleges of Commerce.

This would be the logical and necessary development in course of time of the technical college and the industrial and commercial education in day and night schools; meantime it would probably be premature.

General.

The business of petroleum production and refining being in the hands of large companies, the development is pushed as far as markets will permit. Its dependence on foreign supplies such as iron and steel, tin plate and general machinery will decrease as Indian sources of

supply become available. The distribution to the consumer in bulk should be encouraged as much as possible. It is the least dangerous form of transport when properly handled and, had it been more largely employed in India pre-war, a vast amount of tonnage and money would have been saved with the added advantage of a lower price to the consumer.

Addendum.

In my remarks anent the better housing of labour, I note the employees send about half their earnings to India. The amount sent from the local Post Office in Syriam Village is about half a lakh * monthly. If this money were spent locally a great deal would accrue to the Municipality. I would suggest to the Commission that, as the bulk of the labour in the Province is Indian, this drain is going on in all parts of the Province and is surely a very strong additional reason, to the many cogent ones advanced by various people in recent years, why Burma should be allowed to retain her total revenues for her internal development.

* 6,000 to 7,000 employees.

ORAL EVIDENCE, 23RD JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* You say in your note under the heading "Low standard of comfort" that "better housing conditions are necessary and this should not be exacted from the employer etc." Do the employers out here provide houses for their workpeople?—*A.* No, not for all, only for a certain number, that is, for those whom we require in the factory night and day and whose work is continuous to them we give free quarters. Quite recently in the case of these barracks which I mention in the note we have taken away the charge altogether, and we are putting the men up there free, and they are coming in gradually. But the objection they have is to be compelled to live in organised barracks; they do not like that.

Q. Why do they object to live in better quarters?—*A.* They object to the discipline of living in quarters inside the fence where they are not allowed to bring in strangers or to make disturbances.

Q. What remedy do you suggest for that?—*A.* The municipality at the present moment with a little finance can do much to improve the housing conditions; their own coolies live in the worst hovels, and only the municipality can remedy that. I do not think you could expect other people to do it, so long as municipal property is clearly not up to the standard, the municipality exact from other people, although they are improving gradually. Private proprietors are doing more than the municipality who have not got funds to do it.

Q. But supposing private proprietors get land from Government on easy terms, do you think they would be willing to build suitable houses for these workpeople?—*A.* Yes; there are a certain number who have built quite good class houses for workpeople, but there the water supply is not efficient; the municipal water supply requires better means of distribution.

Q. Are these within the municipal limits?—*A.* Yes. A plentiful supply of good potable water is in existence, but there is no system of distribution. The source here is an Artesian well 400 feet deep drilled with the assistance of the Burma Oil Company, it yields over 60,000 gallons per 24 hours and is on the outskirts of the municipality necessitating long carry.

Q. Cannot the employer compel the municipality to supply water for these people?—*A.* The people who come there are not so badly off as they are in other places, but the water supply has to be brought from some distance and in the hot weather the supply fails (*i.e.*, from dug wells).

Q. You speak about the system of apprentices in the Burma Oil Company; do you take apprentices there?—*A.* Yes.

Q. What class of people are they?—*A.* Burmans.

Q. With what standard of education?—*A.* Mostly the Intermediate examination of Calcutta University, and some of them up to the B. A. final.

Q. What are their prospects?—*A.* Well, this is just a new venture on our part, we commenced this about a year and-a-half or two years ago; the intention is to try to train them sufficiently to be able to take up the places of Covenanted Europeans. The European is drawing up to Rs. 500 or 600, and we are endeavouring to train them to do work which entails supervision of distillation plant or refrigeration plant; they have to be responsible day and night, probably in three shifts, one man would be in charge of 50 or 60 or 100 men. We give them chemical training first, as their business is a scientific one and is becoming more so every day.

Q. Do you think that this plan will be successful?—*A.* I have got 8 of them just now, they are doing very well.

Q. From Burma or from Bengal?—*A.* All from Burma, this is only an experiment, and we do not wish to have too many kinds of people at one time; we prefer usually to take Burmans.

Q. Besides their aptitude for chemistry, have they aptitude for mechanical engineering?—*A.* We have not had young men with similar educational standard in the Engineering Department but have had others who, trained in the country, are doing quite well. None, however, have shown themselves capable of taking the higher posts so far.

Q. Do you think they can qualify themselves to be supervisors or foremen?—*A.* Yes, quite certainly they would in time.

Sir F. H. Stewart.—*Q.* You are the Works Manager and you are also the Technical Chemist?—*A.* Yes.

Q. Where did you study?

A. In Glasgow in the laboratory of the City Analyst for five years, and then I was in a technical college in Glasgow, and also in the University.

Q. You have not studied in America?—*A.* No.

Q. How many years' experience have you out here?—*A.* I have been out here now almost 15 years.

Q. Have you had any experience of the Imperial Institute?—*A.* No.

Q. Have you had any correspondence or any personal dealings with those American Institutes which you mention?—*A.* Not personal.

Q. Do you know who are the governors of those institutes in America and how they are appointed?—*A.* Do you refer to the American Bureau of Mines or any particular Institute?

Q. The institutes you mention with reference to the publication of research results.—*A.* There is a Metallurgical and General Institute in Pittsburg controlled for many years by late Robert Kennedy Duncan whose publications such as the "New Chemistry" have been useful to many in as much as their perusal has enlightened many people of the scope and profit to be expected and attained by well conducted research even in well established industries. The bulletins referred to are issued by the Bureau of Mines, etc.

Q. This system that you describe about proprietary rights in all discoveries or inventions being held by the donors of scholarships for a period of five years or such further term as the governors of the institutes may consider necessary and equitable and the publication of the results as the governors may direct; do you think people out here will agree to that?—*A.* I do not see why they should not. Of course I refer to some of the big manufacturing concerns in America who offer scholarships some times for 10,000 dollars for development of particular processes. In a very little time they recoup that and five years would not be required in most cases.

Q. Who will decide as to the period of time for which the donors will hold the rights of any discoveries?—*A.* I should say it will rest with the governors of the college in question entirely. There will probably be business-men among them.

Q. You are training Burmans in chemistry now with some prospect of success?—*A.* Yes, with great prospect of successs.

Q. What pay do they attain to?—*A.* We have been starting them on Rs. 120 a month rising by 20 rupees increments to Rs. 160; after that further promotion entirely depends on each man's work.

Q. What pay do really good men go up to?—*A.* If the men are equivalent to the men we get from Home, they get the same. They will go up to Rs. 250 to 300, and from here if they can do the work the European does, as efficiently, they would rise with them, and I see no reason why they should not reach Rs. 700—800 per month.

Q. On what pay do the Europeans start?—*A.* Probably Rs. 300. In fact they get less than that; but they have free quarters and they have a certain number of servants; they have a home payment and a bonus in addition to pay.

Q. If you get an equally satisfactory Burman, would you give the same pay?—*A.* Provided they can control labour. The great trouble with the Burman is that he desires continual holiday, has usually a large number of domestic bereavements which entail holidays, in addition to fetes, etc. This means he cannot be relied on for a generation or so and will be his greatest handicap.

Q. Do they come with scientific training?—*A.* They have not had much laboratory training.

Q. Is your labour mostly from China?—*A.* There are Chittagonians at the Distillation Plant and Ooriyas and Koringhee coolies also, Hindus mostly as labourers; in the soldering and tin making department there are Hindu and Burman tradesmen; in fitting and boiler making there are Bengalis and Punjabis.

Q. Is your Indian labour mostly migratory? Are they frequently going forwards and backwards to their homes?—*A.* Not much more than the European. It is only a question of going to their country after four or five years; otherwise they do not much change—with the exception of casual labour.

Q. And are your clerks all Burmans?—*A.* Chiefly Burmans and Chino-Burmans.

Q. Do your workmen attend any night schools?—*A.* Yes, some of the Chittagonians have been trying to get up a small night school of their own for their younger ones, but they have not had very much encouragement. So far they have a school in the village, I believe which teaches writing and reading of their own language.

Q. In other parts of the country night schools do not seem very useful, the labourers come to the school tired?—*A.* I think labour should not be tired. Labour works too long.

Q. What are the hours of the labour here?—*A.* In the refinery labour comes at 6 in the morning; they practically work 12 hours; they get off for an hour in the morning at 10 A.M. for breakfast, resume at 11, and thereafter work till 6-30 P.M. they are not constantly at their work all their time; they get spells of 10 minutes, there is not a great deal of strictness as regards the men being off for a little while, we have places for men to sit and smoke. If it were possible to get labour to put in a fair amount of work in a shift, we could divide up the number we employ now into 8 hour shifts. Our experience is that on Company's pay we get about 50 per cent. of the work that a contractor maistry gets out of the same men.

Q. When you say with reference to research abroad, where do you mean?—*A.* I mean of course research in England where there are very much better facilities than there are here; but research up to a certain extent can be done in India.

Q. That does not preclude you from recommending research institutes in Burma?—*A.* Not at all.

Q. But you are strongly in favour of referring problems to research institutes at Home?—*A.* There would be later developments at home and probably you can employ better men at home.

Q. Supposing such an institute was started to deal with special tropical problems, do you think Burma will be a suitable place?—*A.* In preference to where?

Q. In preference to Southern India for instance.—*A.* Well, speaking for Burma I should certainly think so. I could not speak for India.

Q. But then what would be an advantage from the point of view of Burma might be the reverse for Southern India?—*A.* The thing is, every communication from India takes four or five days to reach Burma, everything has to be sent over by sea, because there is no overland route. Also, it is a great advantage if problems can be discussed *viva voce*; reams of correspondence are saved and altogether it is more satisfactory; very often probably months of useless or unprofitable work are avoided.

Mr. A. Chatterton.—*Q.* Are you in favour of establishing a Technological Institute in Rangoon?—*A.* Yes, it would be a development of the Rangoon College.

Q. Would such an institute be of any assistance to the Burma Oil Company?—*A.* Yes.

Q. Apart from training chemists?—*A.* It would not be of immediate assistance; it would require to be developed till you have trained people to do research work.

Q. Have you research chemists at work in Rangoon?—*A.* Yes, we do a certain amount of research, but we have been doing a great deal of what I would call, for instance, analytical work in research, as distinguished from synthetic research. A research institute here can assist chiefly in trying to separate the constituents of oil and so forth and not only for synthetic work.

Q. The work done in your laboratory is, I understand, analytical work and not synthetic?—*A.* Not synthetic at all.

Q. Have you any arrangement at home for getting problems worked out?—*A.* We have a technical staff in London.

Q. You have scientific experts?—*A.* Up to now nothing synthetic has been done.

Q. Are you manufacturing synthetic dyes or is it only laboratory work?—*A.* Merely laboratory work so far.

Q. You speak in the first paragraph of your note about the better pay and prospects in private employment compared with Government service. Do you think then that if a private expert can get so much larger income as a specialist, you are likely to get much useful work done by a general technologist here in a Government College?—*A.* He will attract a great many to the institute. If we have a research laboratory with a great number of trained men in it whom he attracts, I think there is some chance of getting something done.

Q. That research would be more or less purely scientific?—*A.* Yes, purely scientific.

Q. He would not be able to do any technological research?—*A.* I think it would form a foundation. Institutes for technological research would require a generous endowment, but anything new from the laboratory which seemed promising would no doubt be largely aided by the industry concerned.

Q. Can you give us an idea of the amount of money which is sometimes spent on these technical researches?—*A.* They vary very much. It might be £100 or £100,000. The Germans spent over 2 million in the production of indigo and contact sulphuric acid.

Q. Are there any examples of that kind in connection with the oil industry?—*A.* Yes, but very few of them entailed really large sums because they were usually merely elaborations of or new designs of plant. The process for cracking of oils has cost a good deal in various parts of the world, but speaking generally this phase of oil development has not cost much.

Q. In regard to the position of British industries, that is, industries in British Possessions and Colonies, is the greater part of the research in connection with this particular industry

done in Germany or America?—*A.* A great deal of research work was done by Dr. Engler; the book he published is about the best one on the petroleum industry, but usually German books are compilations of other men's work and Engler is not an exception.

Q. In one of your notes it was stated that the methods employed in Burma till the outbreak of the war were not up to date?—*A.* Yes, that is in my note.

Q. And that since the war broke out you had been rapidly bringing them up to date; is that the result of research work out here or research work in England?—*A.* It is due partly to my experience when I was abroad. I saw in the Austrian State Refineries plants that we had not been accustomed to here. I saw that large units were possible and that they could be built in such a way that the chances of fire are almost negligible. We have also developed new methods of our own in Burma.

Q. Then, referring to the question of training Indians for the technical side and to control industry, do they come from the colleges with the ordinary University degree first?—*A.* We have men with the B.A. and others who failed in the final.

Q. Are they from the Rangoon College?—*A.* Yes.

Q. You have not taken chemists from any other part of India?—*A.* No, I have not so far.

Q. Is there any large opening for these people here? How many of these Indian chemists could you employ?—*A.* Well, possibly in time we may manage to get 20 or 25 of them into different departments; it all depends on the development of the business; we shall probably reduce inferior labour very largely, and increase technically skilled labour.

Q. How many chemical engineers are employed out here?—*A.* We have chemists and engineers entirely separate, quite distinct, but our chemists usually have gained a great deal of experience in engineering in home industries probably in steel work or such other kind of industry at home.

Q. Do chemists do designing?—*A.* General designing. The chemist indicates the nature of the plant required probably the materials advisable for its construction, etc., the engineer designs and builds it always in close collaboration with the chemist.

Q. In the case of your company are designs for new plant and apparatus made out here, or are they sent out from England?—*A.* They are made out here.

Q. Can your designs of plant be made in your own workshops in sufficiently large numbers to meet your requirements?—*A.* We can make distillation plant, but engines, refrigeration plant, etc., we import.

Sir D. J. Tata.—*Q.* Have you got your own foundries and workshops?—Yes.

Mr. A. Chatterton.—*Q.* In regard to labour, do the coolies who come over from the Coramandal coast remain permanently in the service of the company going home occasionally on leave?—*A.* If the men are continually employed the whole year round, they go to their country every three or four years.

Q. Do you give them leave?—*A.* We don't give them leave. We pay them off; when they come back and present their certificates, they are taken on; there is no question of leave because they go for months and frequently stay for years. It is impossible to give them leave.

Q. Do they all speak one language?—*A.* They speak many, we have six or seven different languages, but they all manage to get along in the usual Hindustani.

Q. In regard to applied chemistry do you manufacture chemicals on the spot besides petroleum products?—*A.* No.

Q. Do you get anything from India; any chemicals that you want?—*A.* We buy carbonic acid gas from a supplier in Madras for refrigeration purposes; sulphuric acid we obtain locally.

Q. Do you manufacture candles?—Yes.

Q. Where do you get your stearine from? From home?—*A.* From America; it comes from other sources also; but at present it is entirely from Europe or America, more from America than from Europe.

Q. Do you get any supply at all from India?—*A.* No. We tried samples, but they were not up to the required colour.

Q. Is the quantity that is required in Rangoon by the oil industry very large?—*A.* Yes, it is. I could not tell you the exact quantity that we use at present, but we probably use 60 or 70 tons a month, sometimes more. It all depends on the candle business; it is not so flourishing as before the war, but it is quite enough to manufacture in the country.

Q. Were there many Germans employed in oil industry before the war?—*A.* None, unless you include the American-Germans working in the fields.

Q. Not in the chemical part?—*A.* None at all.

Q. In connection with the Technological Institute you speak about the probability of materials for dyes, etc., being obtained from petroleum, is there any possibility of manufacturing dye stuffs out here?—*A.* I do not see why we could not.

Q. Could you make aniline oil here?—*A.* We could make aniline oil here, there is no difficulty about it.

Q. From petroleum ?—*A.* Yes, we can do it, it is only a question of a profitable method for extraction of the aromatics, they are all present in Burma petroleum, and more or less in all petroleums, sometimes more and sometimes less.

Q. Is there any asphalt ?—*A.* Yes, the crude is not an asphaltic crude, but we produce asphalt of fair quality.

Q. Is what you make here used locally?—*A.* Yes, the demand is greater than the supply.

Mr. C. E. Low.—*Q.* Referring to the third paragraph of your note about research grants of the American type, you suggest there, I understand, the preservation of secrecy for three years ; there is not here any question of the actual proprietary rights or patents being held ?—*A.* It will require an alteration of the patent law ; otherwise secrecy is impossible out here, at least we find it so.

Q. Are you referring to actual proprietary rights, the patents ?—*A.* Yes.

Q. Not the retention of the information as secret ?—*A.* The information would be published, but the public would not be allowed to use it until the people who have been through the expense of paying the scholarship are recouped.

Q. In what you say about research abroad, you are alluding of course to research in your own material ?—*A.* Yes.

Q. And I think you will agree that yours is a very special case ?—*A.* It is a very special case.

Q. In some respects of course you want to make trials and so on?—*A.* Yes.

Q. A very large proportion, far the greater proportion of research problems that arise out here, as you are no doubt aware probably relate to organic material ?—*A.* Yes.

Q. But perishable material and so on, especially agricultural, are liable to changes on the way from here to London ?—*A.* Unless specially packed.

Q. That covers rather a wide range of items from the point of view of this country ?—*A.* Yes.

Q. For instance, supposing you had to do research as to the formation of sugar which was at one time rather important, by the time you get your cane to the Imperial Institute it will probably change so hopelessly as to make research absolutely impossible?—*A.* That is perfectly true, but what I really mean is it will take quite a long time before you will be able to develop any research institute locally so far as to afford any improvement either of facility or apparatus or anything else.

Q. So far as your particular industry is concerned, I can admit it, but as regards research in agriculture and forest products, especially agriculture, we are pretty well equipped in this country ?—*A.* I am afraid I am not sufficiently acquainted with that.

Q. You are on a little more familiar ground probably as regards mineral research ?—*A.* I think we are very well equipped in this country.

Q. You mean the Geological Survey Department ?—*A.* Quite so.

Q. The reason why I am pressing this point is this, that there has been a great deal of talk at home about certain research problems which in India means mostly agricultural and forest material and minerals, not being capable of accomplishment in India ?—*A.* I cannot admit that.

Q. As regards your business ?—*A.* My point is, even when it comes to ordinary chemical problems such for instance as the analysis of petroleum, no one has written or knows what petroleum is composed of ; even in the case of the simple petroleum sold in the bazaar there is no one who knows how many different hydro-carbons there are in any given sample ; it will take years to investigate that.

Q. You mean fundamental mineral problems ?—*A.* Yes.

Q. Have you thought of making carbon, *e.g.*, for electro-metallurgical process by dry distillation ?—*A.* We can produce the carbon required but have not the experience of plant for its consolidation into blocks or rods. As it is, we do not carry the distillation to carbon preferring to stop while the residue is still mobile enough for liquid fuel or pitch. We used to make residual carbon or coke for the old Rangoon Steam Cars.

Q. Supposing on the other hand it was decided to take up any electro-metallurgical process in this country as a matter of national safety, would it be possible to get carbon ?—*A.* Yes, quite.

Q. You get your men as chemists and you train them as chemical engineers ?—*A.* Yes.

Q. I mean the Burmans that you are getting ?—*A.* They have been educated here in Rangoon College and they have done one or two years in chemistry and probably physics and a little mathematics ; we get them and train them ourselves.

Q. What sort of training do they get ?—*A.* Laboratory training and subsequently in the works in the running of plant and handling labour.

Q. Have you any idea of making chemical engineers of them ?—*A.* Yes.

Q. Have you any technical institute or something of that sort to give them training in chemical engineering ?—*A.* Well, those that come to us from the college possess only general

scientific education; they have no idea of the technical side and they have not very great experience of experimental work, I mean laboratory work.

Q. The point of my question is this: that in India it has always been objected that a purely chemical training gives to Indians an unpractical bias which is very undesirable; it is desirable to give them a definite practical bias as far as possible.—*A.* We have also experienced that.

Q. In the case of the Britisher he is naturally a practical minded man and his theoretical education has a less injurious effect on him, but how is that with the Burmans?—*A.* I agree with that opinion and it is rather early to be dogmatic about the results of the training we are giving our men. I am of opinion however that if they had had a workshop training of any kind before coming to us, our task would be considerably lightened. Their training has been too academic, too much on the modern side of the college and not sufficient of practical and applied science.

WITNESS No. 427.

Maung Maung Bya.

MAUNG MAUNG BYA, A.T.M., *Assistant Registrar, Co-operative Societies, Burma.*

WRITTEN EVIDENCE.

Amarapura Weaving School.

I have some experience of the working of the Saunders Weaving School, Amarapura, where weaving is done under expert instruction.

(1) I find that as much is done in two days as could be done in eight with the old appliances and the old methods.

(2) By increasing the number of heddles a great variety of patterns is obtained. These are popular and sales have improved.

(3) A large number of pupils have passed through the school and besides learning what is then taught some of them have made ingenious modifications in the looms there in use, whereby with simpler and less costly appliances the same results are obtained.

(4) Owing to the foreign imports, the number of weavers in Burma fell from 277,774 at the 1901 census to 151,358 in 1911—a decrease of 45 per cent. I believe that the instruction given at Amarapura will gradually lead to an increased prosperity in the weaving trade.

Pioneer Factories.

In view of the success of the weaving school I suggest that the following pioneer factories should be established:—

(*i*) For the production of cotton yarn. This might be suitably placed between Meiktila and Myingyan.

(*ii*) A sugar refinery. To be situated in the sugar-cane growing area such as Kyaukse, Pyinmana or the Môn canal tract in Minbu.

(*iii*) A pottery. Probably no very elaborate machinery must be set up. Minor improvements such as have been introduced in the process of weaving at Amarapura should lead to a quicker out-turn and better work. The pottery should be established at one or more of the following centres—Kyaukmyaung in Shwebo district, Pyinmana, Twante, Pegu.

(*iv*) A paper mill. To be situated in an area where bamboos and other materials are plentiful.

The establishment of such pioneer factories was recommended by Sub-committee No. 6 at the Agricultural and Co-operative Conference of 1915.

When the factories have proved themselves successful, they could be handed over to Co-operative Societies or to Burman companies formed under the Companies Act.

Co-operative Societies.

Co-operative Societies benefit an industry in various ways.

(*i*) Capital can be borrowed at a moderate rate of interest.

(*ii*) Raw material can be bought cheaply in large quantity by the Society.

(*iii*) The finished goods can be kept by the Society for retail sale instead of being sold at a low price to middlemen immediately on completion. As the middleman is usually a money-lender his inclination benefits the industry in more ways than one.

(*iv*) Association together as members of the same society improves the general standard of skill and intelligence.

The following industrial societies are now in existence:—

Basket makers of Bodigon, Mandalay.

Cabinet makers of Hemamala, Mandalay.

Slipper makers, Mandalay.

Potters near Kyaukmyaung.

The development of these societies has been retarded by the war, which broke out just about the time of their foundation. But their members are indisputably more prosperous than individual workmen not belonging to a society.

Government assistance to industries shall take the following form:— Government assistance.

(*i*) Formation of co-operative societies for workers in the same or allied industries in any locality.

(*ii*) Government advances to these societies of workers (through the Registrar, Co-operative Societies) *cf.* advances made by Government to agricultural societies.

(*iii*) Assistance in placing certain products on foreign markets. —

Combination of working societies in a sale society with a shop in Mandalay and a branch in Rangoon. The sale society would require no capital for the purchase of goods. Articles would be held for sale at a price fixed by the workers' society, and would form security for loans to members. Prices would be altered by the society according to the state of the market, to which the selling agent would direct the societies' attention. Sales agencies.

The measures above outlined would have the effect of advertising the goods and the societies which manufactured them; of bettering the condition of the workers and increasing public confidence in co-operation. They might be applied to the undermentioned industries: Joinery, basketwork, Sitsi and lacquerwork, leather work of various kinds, leather and cloth work, umbrella-making, pottery, brass and iron work, cheroots (Sebyin leik), embroidery and work in which timber, paper, cloth are combined.

I do not recommend direct help to industries either by the existing banks or by a new bank founded for the purpose.

(*i*) The workers must create confidence and security by forming themselves into co-operative societies.

(*ii*) Arrangements must be made to secure the best market for their goods.

(*iii*) When they have shown that they understand and are able to benefit by sale facilities and (in case of delayed sale) loans for capital expenditure, they would be allowed to deal either with the existing co-operative central banks or with an industrial bank specially adopted to their needs.

My recommendations are based on my experience of the early development of Agricultural Co-operative Societies in Burma. In 1905-06 Government granted a loan without interest for three years and at four per cent. for ensuing ten years. It was not necessary, however, to draw on Government to the full extent of its offer. Mr. R. C. J. Swinhoe, Solicitor, Mandalay, acting as agent for private investors, was able to obtain funds from private investors. This agency system lasted for three or four years, after which the bank was founded.

So industries should be financed in the first instance by Government and, later, by private investors and persons wishing to purchase their goods. It is only in the final stage that the bank can help them. I approve the appointment of a Director of Industries. He should be a Government official. A non-official would not be able to discharge the functions of the office or have sufficient influence over the workers. He should be well acquainted with the conditions under which they work and live. He should, with the Agricultural and Co-operative Department, be under the Rural Development Commissioner, when appointed. Director of Industries.

In conclusion, I am of opinion that two measures are of supreme importance for the development of industries in Burma— General.

(*i*) Improvement of method, by instruction in technical schools. The artistic tradition—the arrival of which in Burma so impressed His Excellency the Viceroy—can only be preserved by the teaching of quicker methods of manufacture, as without these many of the arts are doomed to extinction, *e.g.*, formerly a man weaving a *paso* received three rupees and had to work eight days to finish his task: with an improved loom he can do the work in two days. If he is paid Rs. 2 only, he gets one rupee instead of 6 annas a day and *pas* can be sold Re. 1 cheaper.

Technical schools may be necessary for the instruction of those employed in the pioneer factories.

(*ii*) The law conferring on Burman Buddhists testamentary power. Without them a business is liable to too many vicissitudes.

(*Witness did not give oral evidence.*)

WITNESS No. 428.

MR. F. J. WARTH, M.Sc., *Agricultural Chemist to the Government of Burma.*

WRITTEN EVIDENCE.

Manurial requirements of soils.

Regarding Upper Burma I have at present no remarks to make.

The variations are very great and until more work has been done the position cannot be gauged.

The accompanying table shows the composition of six typical Lower Burma soils. Figures for Pwinbyu and Tatkon farms are included for comparison.

	Tantabin. B.	Hmawbi. A.	Dabein. A.	Pyinbongyi. B.	Yedashe. B.	Kyungong. A.	Tatkon. A.	Pwinbyu.
Insoluble Residue	77·24	63·87	66·85	84·65	81·66	84·37	79·46	62·67
Soluble Silica	8·51	15·26	12·99	5·51	8·32	6 08	7·55	12·90
Ferric Oxide	3·65	3·63	4·98	1·63	1·85	1·81	3·17	6·41
Alumina	5·88	10·07	9·64	4·51	4·67	4·65	4·90	10·61
Lime	·28	·29	·16	·05	·14	·12	·48	·56
Magnesia	·46	·29	·08	·05	·17	·09	·27	·33
Potash	·46	·57	·51	·24	·37	·24	·33	·77
Soda	·29	·36	·28	·18	·15	·18	·32	·52
Sulphuric Acid	·07	·08	·06	·07	·04	·03	·06	·07
Phosphuric Acid	·09	·03	·03	·02	·01	·01	·06	·13
Carbondioxide	·01	·02	·05	·01	·00	·00	·04	·12
Org. Matter Combined Water	3·06	5·53	4·37	3·08	2·62	2·42	3·36	4·91
TOTAL	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

The analyses show that the Lower Burma soils are generally thoroughly leached out and contain only small quantities of alkalis and alkali earths. Almost all these soils are strongly acid.

It has been found that paddy generally grows well on acid soils, but it is possible that in unfavourable years the soil reaction plays a part in reducing the yield to an extent which would not otherwise occur. This question is under investigation.

From the above analyses the relative poverty of the Lower Burma soils is made clear and it is not surprising to learn that while the Pwinbyu soil can produce 80 baskets paddy per acre, many Lower Burma soils produce no more than 20.

Besides the general poverty of the soils, another serious matter is the lack of available P_2O_5 in many cases. The analyses given above show that many of the soils contain very small amounts of this constituent.

The availability of the P_2O_5 in these soils is not readily estimated by analysis.

To do so I have been carrying out during the past three years an extensive enquiry involving soil analysis, pot cultures, and plant analyses.

The methods employed are given in detail in Bulletin No. 13 of this department.

By this means the lack of P_2O_5 in a number of soils has been proved to be serious and the need of phosphatic manuring conclusively proved.

Phosphatic manure in the form of bone is available in considerable quantity, but unless it can be sold at a much lower price than was current before the war it cannot be profitably employed for paddy.

Crushed bone can be produced now with profit at Rs. 60 a ton, and at this rate it could be used for paddy. But if the export market is open and freights normal the material would not stay in the country at this figure.

The available bones are certainly also not collected as carefully as they might be.

In a "Note on available manures" (Government Press, 1912) I have made estimates of the readily available manures in the province.

That large areas of land which are favoured with abundant rainfall and a suitable climate should continue to yield low crops is a matter to cause some anxiety.

It has still to be pointed out that nothing but a drastic change in the agricultural practice of these tracts of the country will make it possible to bring the land up to the high state of fertility of the Pwinbyu farm for example.

The difficulties under present circumstances are :—

1. There is not enough farm-yard-manure available in the area even if it were perfectly conserved and utilised.
2. The area grows practically nothing but paddy, and its low market price makes it almost impossible to manure this crop profitably.

I am not surprised that many cultivators say they cannot afford to conserve and cart their cattle manure.

Experiments and demonstrations would no doubt prove that more can be done in this matter, but it must be realised that the economic solutions will generally not be easy and in some cases it will probably be beyond the means of small cultivator. The department with the small means at its disposal has made excellent progress in production and distribution of superior seed which would give a distinct if small increase in outturn. We have however not been able to even make a start in soil improvement which must be done if the outturn is to be materially increased.

It is probable that soil improvement will involve the introduction of other crops as well as manuring.

This problem really raises the question of the scope of the Deputy Director's work. This officer will always have a full share of executive duties to perform and cannot generally without help do justice to a large question of this nature.

The matter would be best dealt with by a Committee of the department. An expert or perhaps two experts in collaboration will then be in a position to draw up a scheme of work.

A senior officer of Government should be in touch with the committee and experts while the work is being planned in order that he may be in a position to advise Government when the scheme is submitted.

Storing and transport of Agricultural produce.

It would no doubt be of interest to study the storage and transport of all the main products with a view to the prevention of loss and deterioration. I can only give my experience regarding paddy.

In a note on "The Rice Industry of Burma" published in the *Agricultural Journal* in 1912, I have described some of the heaps of paddy exposed to sun and rain which can be seen along the railway line and at wharves.

Since then matters have improved considerably. Dealers and brokers have put up sheds to accommodate a good deal of the produce as it comes in. But either much more cover is still necessary or arrangements must be made to remove the produce at such a rate that the godowns are not overtaxed.

It is doubtful whether any other agricultural product suffers so seriously as paddy when it is wetted.

This point will be brought out by the following considerations :—

The paddy is milled before marketing. During milling the chief loss is caused by breakage of the grain.

The broken grain has to be separated from the whole seed and is sold at a much lower price.

The value of the paddy to the miller and the price he can afford to pay for it to the cultivator depends therefore to a considerable extent upon the amount of breakage taking place during the milling process.

I have been engaged for some time in determining the factors which affect the fragility of the rice grain, and though I am not yet in a position to give exact figures I can say that without doubt wetting and drying the grain increases the fragility more than any other factor examined.

The grain also frequently becomes discoloured which further reduces its value.

It is a serious matter that the chief agricultural product of the province should be so liable to deterioration before it can be put on the market.

Sugar-cane.

I have on several occasions pointed out the value of the sugar-cane crop both economically and agriculturally to the province.

There are undoubtedly many areas in which sugar-cane will thrive excellently.

In 1911 I showed that the Mohnyin valley offered excellent prospects for this crop.

Now that a farm has been opened in this area—to test wheat mainly—it has been found that sugar-cane is very suitable and probably the most profitable crop if a reasonable market can be procured for it.

The Tatkon area and the Pwinbyu irrigated area have also been shown by the department to grow very good sugar-cane crops.

It has also been grown on the Hmawbi farm (Lower Burma) on paddy land.

The last is a notable success when considered in conjunction with the soil requirements of this area.

It is scarcely necessary to point out that sugar-cane can only be satisfactorily marketed after it has been converted into jaggery or sugar.

Government has agreed to the proposal for construction of jaggery-making plant at the Tatkon farm.

I should like to emphasize that all the actual and the many important potential sugar-cane-growing areas can make no progress whatever, and it is little use testing cane on other areas until we know how to convert it into a marketable product.

I am inclined therefore to lay a great deal of stress on the proposed work at Tatkon which would supply information for the whole province. It should be commenced with this wide object in view as soon as convenient and on a liberal scale.

Irrigated tracts.

I have called attention to the opportunities that lie before us in the irrigated tracts if only a greater variety can be introduced into the agriculture of these areas. At present the tendency is for these areas to grow nothing but paddy.

In Kyaukse sometimes early sesamum precedes paddy, but whenever water supply is sufficient the cultivator prefers two crops of paddy. The reason being that as at present grown, paddy is the more certain crop.

In the Mandalay canal tract the cultivators are generally very poor. They use the water practically solely for paddy and have no other crops to fall back upon.

I have noted in this tract that the Pyaung crop (Sorghum) raised on unirrigated patches is frequently more valuable than the paddy to which expensive irrigation water has been supplied. Irrigation experiments on this and other crops are therefore at least worth trying.

The following small experiments carried out by me at Mandalay shows another opening :—

Instead of growing a single long lived paddy crop, a short lived paddy was grown and this was followed by gram. The result was that in addition to a normal yield of paddy of 2,000 lbs. per acre a crop of gram weighing 650 lbs. per acre was obtained.

It is quite clear that no single paddy crop of the most highly selected seed could on this soil show returns equal to the above.

There are two random examples to show that the agriculture of the irrigated tracts requires to be fundamentally changed to produce satisfactory results.

To carry out changes of the nature intended, it would be necessary to lay out elaborate cultivation experiments to study economic, drainage, grazing and other difficulties, and to investigate financing and legislation which might be required. This work cannot be under taken by a Deputy Director alone. The department, as a committee, would have to take it up and as powerful backing by Government would be necessary, a senior officer of Government should be associated with the Committee from the commencement.

From these notes I conclude that—

(1) More might be done to study agricultural needs from the Provincial point of view.

The scheme for dividing the province into charges each under a Deputy Director is suitable as far as executive work is concerned, but it must involve weakness of policy in cases where the whole force of the department and of Government is required to bring about considerable changes. An expert as Director would, I believe, further this object, but progress is only possible if it is understood that a very important part of the work of all the experts must be consultative in distinction to executive.

(2) To obtain the whole-hearted support of Government it is necessary that a senior officer, *i.e.*, a Commissioner from the innermost council of the Government, should be in intimate contact with the experts during their deliberations.

(*Witness did not give oral evidence.*)

Mr. A. McKerral.

WITNESS No. 429.

MR. A. MCKERRAL, *Deputy Director of Agriculture, Southern Circle, Burma.*

WRITTEN EVIDENCE.

Note on manures and soil fertility

The fact that Burma is a country which is continually exporting the bulk of its agricultural produce while at the same time its imports consist mainly of materials which cannot

find their way into its soils makes the question of the maintenance of fertility an extremely important one. The main agricultural areas of the province are (1) the great plain of Lower Burma growing almost entirely rain fed rice ; (2) the unirrigated dry zone country producing cotton, sesamum, groundnut and various kinds of pulse ; (3) the irrigated tracts of the dry zone where rice is also the principal crop ; and (4) the northern wet areas.

Of these the first is the most important, and the evidence for the necessity of manuring which is given here is derived from experiments performed on typical Lower Burma rice soil at the Hmawbi Agricultural Station.

These experiments have been conducted during the last four years and the figures given below are averages for that period.

The plots were ·09 in area, and each had its own unmanured control. For the period 1912—16, over which the experiments were conducted, the average yield per acre of grain for the unmanured plots of the experimental block was 1,250 lbs. The land before acquisition by Government had been cropped for at least 50 years without any manuring except that given to nurseries, and judging from the yields of rice on virgin soils in other parts had probably, during the period of cropping, fallen from more than double its present yield. The yield of 1,250 lbs. per acre is in fact the minimum yield possible, and a balance has now been struck between the yield got and the annual accretion of fertility due to natural causes. This decline in fertility is, of course, not only due to exhaustion of plant food, but has been hastened also by loss of physical texture due to continued puddling of the upper layers.

The effect of various manures on such a soil, which is typical of many of the worn out areas of Lower Burma, will be seen from the following statement which gives the actual figures got at Hmawbi :—

Kind of Manure.	Increase over unmanured plot.
1. Cattle manure to supply 30 lbs. nitrogen per acre	65 per cent.
2. Cattle manure to supply 70 lbs. nitrogen per acre	71 per cent.
3. Cotton cake to supply 50 lbs. nitrogen per acre	36 per cent.
4. Bone-meal to supply 20 lbs. phosph. acid per acre	28 per cent.
5. Superphosphate to supply 20 lbs. phosphoric acid per acre.	40 per cent.
6. Potassium sulphate to supply 20 lbs. potash per acre	23 per cent.
7. Sodium nitrate to supply 30 lbs. nitrogen per acre	7 per cent decrease.
8. Ammonium sulphate to supply 30 lbs. nitrogen per acre.	68 per cent.
9. Nitrolim to supply 30 lbs. nitrogen per acre	36 per cent.
10. Ammonium sulphate to supply 30 lbs. nitrogen per acre. Superphosphate to supply 20 lbs. P_2O_5 per acre Potash sulphate to supply 20 lbs. K_2O per acre	Gave 77 per cent. increase in grain yield over the unmanured plot.

With the single exception of nitrate of soda, which gave a decrease, all the manures applied have given increases, in some cases so considerable as to be very striking. We may comment on the above as follows :—

(1) Cattle manure in Lower Burma is available for the nurseries only and not for the transplanting fields. During the year 1915-16, all the cattle manure conserved at the Hmawbi Agricultural Station was weighed and showed a total of 204,000 lbs. for 32 bullocks. This works out at approximately 3 tons per animal per annum and allowing one pair of bullocks to ten acres of land (the usual rate in Burma) it will be seen that the amount available per acre of cultivated land is only about three-fifths of a ton. As the virtue of cattle manure depends mainly on its action as bulky organic matter on the texture of the soil this amount would be quite insignificant. Hence campaigns to conserve cattle manure will not furnish a solution of the problem.

(2) Oil cakes. These are far too expensive to be capable of extensive use. A side experiment was performed in 1915 with sesamum, cotton, and groundnut cake to supply 50 N. per acre, but in all cases a net loss varying from Rs. 25 to Rs. 42 per acre resulted from the use of the material.

(3) The highest yield got was in the plot which received a complete dressing, although the use of ammonium sulphate alone is also striking. But none of these substances can be economically applied. Trials made in 1915 with smaller quantities all resulted in losses varying from Rs. 6 to Rs. 8 per acre as a result of the application of the manure.

(4) Bones. The amount applied in above scheme is small and further trials were made on large plots to test this substance. In the case of bonemeal and dissolved bones it was found that profits of Rs. 5 and Rs. 6 per acre respectively could be got from their application. The cost of the manure per acre was Rs. 11. This profit, however, is liable to fluctuation, and last year bonemeal which cost Rs. 80 per ton in Calcutta barely paid for itself. There is no doubt about the value of bonemeal for exhausted paddy land, and all that is required is to be able to purchase it cheaply enough. Its use is at present unknown among paddy cultivators, although the amount of bones produced in the country must be very large and the pre-war export was considerable.

(5) The results got from the application of nitrolim (atmospheric nitrogen calcium cyanamide) are not comparable to those got from sulphate of ammonia. This is probably due to the fact that under the conditions of swamp paddy soils much of the nitrogen in the manure escapes into the atmosphere either as free gaseous nitrogen or ammonia, but this aspect of the matter requires further attention.

From the above it will be seen that the position in Burma with regard to manure is one that calls for immediate attention. Green manuring is not possible to any extent, because by reason of the abrupt fall of the monsoon a green manure crop cannot be raised in time to be ploughed in before the main crop, and this holds not only for paddy but also for all the rain crops of the dry zone. The position may be summarized as follows. Artificial manures and oil cakes are too expensive. Cattle manure is not available in quantities sufficient to manure more than one-tenth of the rice area. Green manuring is not possible. In the case of bonemeal the price is also too high, and hitherto it has been exported, mainly, to Japan and Germany. Yet this manure ought to be available in the country, and if obtained at from Rs. 40 to Rs. 50 per ton would in most cases be a valuable manure. Our recommendations are as follows :—

(*a*) An attempt should be made to retain in the country bones, horns and other products of an animal nature. The exports of these in 1913-14, the last pre-war year, were as follows :—

	Amount.	Value in Rs.	Remarks.
Horns, horn tips and horn meal	5,798 cwts.	1,63,351	Exported mainly to France.
Bones	1,681 tons.	1,06,949	Exported mainly to Japan and Germany.

(*b*) Government should either promote itself, or subsidize a company to begin an internal trade in the above materials. Prior to the war, bonemeal was made in Rangoon by a German firm, Messrs. Mohr Brothers, who, it is well known, made enormous profits in this business. A Rangoon firm has this year erected a bonemill at Thazi and are prepared to sell at Rs. 65 f.o.r. Their product and this kind of bonemeal has not yet been tested. Besides it is almost certain that Rs. 65 will prove to be much too high a price for its use in paddy cultivation. Mohr Brothers bought bones from the Rangoon Municipality at Rs. 20 per ton, and it should not cost more than Rs. 10 to convert a ton of bones into bonemeal. Allowing another Rs. 10 for profit it should be quite possible to sell bonemeal to cultivators at Rs. 40 to Rs. 45 per ton, and at this price good profits could be got from its application. The amount of bones exported must be a mere fraction of the amount available, and every effort should be made to organize collection and extend the industry.

(*c*) A survey of the possibilities of Burma with respect to supplies of fish manure should be made. This material, which is got from prawn refuse, is made mainly in the Mergui district and is almost all exported to the Straits and Hongkong. In 1913-14, 5,029 tons of the value of Rs. 3,56,939 were so exported. In America there is a very large trade in fish-oil and fish-cake, and it is possible that a similar industry might be started in Burma, where the Coast line is large. This would require scrutiny by a fisheries expert. An industry of this kind has recently been started in Madras.

(*d*) Attention is drawn to the great waste at all the large municipalities in Burma. In Rangoon the blood of animals is entirely lost and carried by a drain to the Rangoon river. All the sewage of the city meets a similar fate. Enquiry should be made as to whether it would not be possible to render these substances available for manurial purposes.

(*e*) The possibility of making atmospheric nitrogen should be a subject of serious enquiry. The Shan States plateau would seem to afford good facilities for hydro-electric power, and the manufacture of nitrogenous compounds by this means, is, apart from its agricultural importance, a matter of common prudence for every province of the British Empire. Unfortunately the Agricultural Department has not yet been able to undertake properly experimental work on the dry zone soils, but there can be little doubt that either calcium cyanamide or calcium nitrate would give even better results there than on rice soils.

The Agricultural Department in its relation to Industrial Development.

Sugar-cane.

The growing of sugar-cane and the manufacture of either jaggery or white sugar are industries which in Burma are capable of very considerable expansion. The Agricultural Department has not had as yet any station specially equipped for sugar-cane work, but a good many trials in various parts of the province have been made. My own experience has been limited to Lower and Central Burma, but I understand that in certain parts of Northern Burma the crop also can be made to grow well. From the trials which have been made by me I have drawn the following conclusions :—(1) that on ordinary swamp paddy soil in Lower Burma sugar-cane cannot be made to grow well and yield a paying profit. This is due to the difficulty of working these soils and to the fact that drainage is not under proper control. (2) That scattered all over the country there are patches of higher well drained rice land on which sugar-cane can be made to grow well. (3) That the small streams which are very abundant in Lower Burma flowing east and west from the Pegu Yoma usually have a strip of well drained and fertile soil along their banks which is very suitable for cane cultivation. (4) The newly opened Môn Canal system in the Minbu district possesses large areas of land which give high yields of cane. The Agricultural Department opened four years ago a small farm at Pwinbyu for the introduction of cane in this area and the cultivation is slowly increasing. It wants, however, the stimulus of sugar or jaggery industry to enable more rapid extension to be made. In 1913 a Rangoon firm proposed to conduct experiments here with a view to beginning white sugar manufacture in this tract, and Government made arrangements to contribute Rs. 10,000 towards the cost of the experiments, the firm to contribute an equal amount and bring planters from Java to work the crop according to Java methods. With the beginning of the war, however these arrangements fell through. During the present year a Mahomedan merchant of Rangoon is erecting a small white sugar factory at Zeyawaddi in Toungoo district. The factory is meant, I understand, to turn out about 1 tons of white sugar and 2 tons jaggery per day, and the owner has been given rebate of land revenue for a certain number of years.

Jaggery.

To extend the jaggery industry I consider that the most helpful method will be by means of small pioneer factories to deal with 100 acres or so, the surrounding cultivators being at the same time organized co-operatively. When the factory has been made to pay it might be taken over by the societies and worked by them. This method, however, should be tried experimentally at first and great caution used. When one factory had been made a success it might be possible for societies to find the necessary capital and erect their own factories without Government intervention.

Sugar.

In the case of white sugar the difficulties are much greater. To run a white sugar factory of even medium size, several thousand acres of land must be under the control of the factory, and for the owner to trust simply to the word of cultivators that cane would be grown where it was not grown before would be an extremely rash policy on his part. I do not see how such large areas can be quickly put under cane except by direct governmental interference, and the only method would seem to be to demarcate suitable areas approach commercial firms on the subject and, in the event of their being willing to undertake the enterprise, to use such legal machinery as already exists or to provide new legislation in order to ensure that difficulties are not placed in the way of the creation of an important industry by the owners of the land. Some method whereby the land became the property of Government and was then leased out to the firm would be what was required. The owners of the land would become *ipso facto* tenants of Government and would be required to conform to such regulations regarding cultivation as Government might prescribe. This policy has not been adopted in Burma on a large scale, but it would appear to be the only alternative to a system of 'laissez-faire.' The alternative would of course be for the firm to purchase the land directly from the owners, provided the latter were willing to sell and it is just the uncertainty regarding their willingness that gives rise to difficulties. I do not consider that pioneer or demonstration factories for white sugar are desirable or feasible. The work is too technical and on too large a scale to be done by Government and can best be done by private individuals. The real difficulty in this case, is, as has just been pointed out, the control of the supply of cane.

Imperial Institute.

During the last ten years the Agricultural Department has submitted a large number of samples of various product for evaluation to the Imperial Institute. These consisted of

cotton, tobacco, rice, pulse and other materials. I consider that the Institute fulfils a very useful purpose and is capable of giving substantial help to Agricultural Department. Its main function, so far as the latter are concerned, is as a clearing house for information. Being in a position to examine products from all over the Empire its staff is necessarily in possession of wider information than the Agricultural experts in any one province and is able to supply valuable information in connection with crop varieties or in the introduction of new crops. It conducted important analyses for the Agricultural Department here in connection with prussic acid in Burma beans and suggested the Madagascar bean which is at present being experimented with here and was previously unknown to us. It is also the best and indeed the only competent agency for procuring new varieties and has supplied us with rice, maize and pulse varieties from many parts of the world. It is also a valuable agency for bringing agricultural departments into touch with the needs of commercial firms in Europe, and in this connection has recently obtained for me a very valuable series of valuations of Burma rice varieties. Its obvious disadvantage of course is that it cannot be in touch with the local conditions and cannot conduct enquiries where a knowledge of these is of first importance. For example, although it can supply varieties for trial it cannot possibly say which will succeed. This must be determined on the spot.

Agricultural surveys.

Q. 25. When the Agricultural Department was started here in 1907 agricultural surveys of districts were included in the programme of work and a few were carried out. They had, however, to be stopped owing to insufficiency of staff and pressure of other work. I consider that such surveys are of much importance, but the real difficulty in conducting them lies in getting men possessed of sufficient knowledge to carry them out efficiently. To be of any use they must be carried out by superior officers who have either had the necessary experience to guide them or have at their disposal the advice and guidance of their seniors. Deputy Directors of Agriculture would naturally keep a full diary during their tours which would form the basis of such a survey. It would, however, be better to have the work done systematically, each expert doing one district per annum, the results of the survey being published as a Departmental bulletin. The objects of such a survey should be to ascertain (1) indigenous methods and practices, (2) whether cropping systems should be changed and whether new crops can be introduced, (3) whether improvement in practice is possible or not, and (4) whether there are any indigenous products worthy of attention with a view to their exploitation. With regard to the last I would remark that in a country like Burma which has many little known indigenous products it would be worth while to make a careful examination of these, and for this purpose a special experimental garden, under the charge of one of the plant breeding experts, should be provided. At present attention has to be concentrated on species which have been cultivated for ages and which have an established market. There are, however, doubtless many kinds of fibres, root crops, medicinal crops, etc., now growing wild which might possess economic value if cultivated and improved.

Assistance in marketing products.

I am of opinion that it would be useful to have a museum of agricultural products in Rangoon, probably to form part of a larger commercial museum. A complete collection of proucts would form a useful means for junior members of firms getting to know these products and would provide a useful standard of comparison with regard to purity and quality. New crops or improved varieties could also in this way be brought easily and quickly to the notice of firms interested in them. Such a museum should contain samples properly labelled and named with the systematic and Burmese names, and also the name by which each is known commercially, of all the important cereals, pulse, oil seeds, fibres, etc., produced in the province properly arranged and catalogued. It should be under the charge of a Deputy Director and there should be one English speaking subordinate, preferably a graduate, to supervise it.

Need for trained supervisors.

There is at present in Burma an almost complete dearth of Burmese mechanics capable of being placed in charge of prime movers or of taking charge of small industrial outfits for cotton ginning, oil pressing, and cane crushing. The mechanics employed are mainly Indians. In the cotton ginning industry mechanics are often brought from Bombay for the season and paid good wages. This may be partly due to the disinclination of Burmans to take up this work and to the fact that they can find other employment. It is, however, a state of matters capable of being remedied, and which ought to be remedied. Within recent years Co-operative Credit Societies have expressed themselves as eager to take up oil pressing and cotton ginning, and the absence of trained mechanics is undoubtedly a bar to this. Some time ago it was proposed to institute a class for agricultural mechanics at the Engineering School, Insein, but nothing more has come of the proposal. I believe that such a course would be a great help and enable a beginning to be made in the training of the kind of man wanted, and I would suggest that a trial be made of this scheme. Until something is done the demand which undoubtedly exists for oil engines, power pumps, power fodder choppers, small oil pressing plants, etc., by Co-operative Credit Societies cannot be properly met. There is also a serious lack of blacksmithing skill which is militating against the efforts of the Agricultural Department to introduce improved cultivation implements. Blacksmithing should accordingly find a place in the course. It is probable that, with the development of agricultural education, district agricultural schools, attached to district farms, will be founded. It would be easy to provide a course of smithing at such schools, and the Insein Engineering School could confine itself to producing men competent to act as instructors at the agricultural schools.

Hydro-electric power.

Q. 102. I do not know whether the possibilities of the Shan plateau as a source of hydro electric power have been examined, but, if not, a survey should certainly be made at an early date. In a separate note on manures, the poverty of Burma in these materials has been

shown and the manufacture of atmospheric nitrogen compounds provided the process can be cheapened rapidly in the near future would be of the greatest importance to the agriculture of the country.

In a country which produces so much cheap rice as Burma the questions of beginning industries dependent on rice as a raw material seems worth considering. It is not possible at present to say anything definite on this subject, and the detailed data for estimating the possibilities of such industries would have to be left till such time as a Director of Industries is appointed or be worked out by a commercial firm possessing the requisite knowledge. Those that suggest themselves to me at present are—(1) the brewing of light beer such as Japan is now producing in large quantities, (2) the manufacture of industrial alcohol and (3) manufacture of starch, glucose and special food products such as the Americans have excelled in during recent years. These suggestions are merely given for what they are worth and for the reason that anything which will enhance the present low price of rice, will be a benefit to the province. In the case of starch, Messrs. Colman's representative visited Burma a few years ago in order to consider the possibility of acquiring land in the province so as to make the firm independent of violent fluctuations in price. It would appear that a firm working on the spot and contracting with Co-operative Credit Societies or other cultivators would be in a more favourable position than one thousand of miles away and having its raw material passing through the hands of several different middlemen. To encourage firms in this respect it would appear that the services of a trade representative would be useful. General,

(*Witness did not give oral evidence.*)

WITNESS No. 430. *Mr. A. R. H. Ady.*

MR. A. R. H. ADY, *Broker and Mine owner, Tavoy.*

WRITTEN EVIDENCE.

I.—Financial aid to Industrial Enterprises.

I have had a little experience in raising capital for industrial enterprises which is confined almost entirely to Rangoon. Capital.

The greatest difficulty I have met with is that the local capitalists are very seldom willing to subscribe to local enterprises. To remove this difficulty, I would suggest steps being taken to place industries on a sound commercial footing so as to attract *bonâ fide* investors to take them up.

(1) Capitalists or *bonâ fide* investors, Sources of Capital.
(2) Speculators, and
(3) Outside Capital.

Possibly the masses or poorer classes would be induced to put their small savings into industries if they were assured that they would be sound investments.

I have no knowledge or experience of financial aid by Government to industrial enterprises, but I think that all or any of the methods mentioned would prove helpful to those industries that have been proved commercially sound. Government Assistance.

Wherever Government assistance is applied there should be Government supervision; such control to last till the assistance has been rendered unnecessary or discontinued.

As far as I know there are no Government Pioneer Factories in this province. Pioneer Factories.

I think such factories should be established all over the province to deal with the natural products of the country. These factories should be closed as soon as they are found to be unprofitable or made available to the public as soon as they are proved to be commercially sound. These factories should on no account be turned into permanent Government enterprises or they would defeat the object for which they were started.

Financing agencies are generally a failure. I attribute this to the want of expert advice and the lack of proper management. The only financing agencies I know of are syndicates or groups of capitalists who take up certain industries such as Mining, Sugar, Cement, Paper, Shellac, Crockery, Glass, Tinning Fruit, etc. I have been personally interested in a good many syndicates of this nature which have proved failures for the want of—(1) expert advice and consequent underestimating of the capital required, and (2) good management after the venture has started operations. The starting of Government pioneer factories would enable such syndicates to take up and carry on with assured success any enterprise that has been proved commercially sound and for which expert advice is available. Financing agencies.

If all Government pioneer factories were made available to the public and the conversion of such enterprises into permanent Government establishments prohibited, there would be no fear of such aid competing with established external trade. Limits of Government assistance.

II.—Technical aid to Industries.

I believe demonstration factories can with advantage be started for the following industries :— Demonstration Factories.

(1) The manufacture of Cement. The raw material is to be had in abundance in the province, which has been found by a syndicate originated by me to be capable

of being turned out as high class cement; (2) Dyes, (3) Fibres, (4) Lac, (5) Pottery, (6) Paper, (7) Sugar, (8) Tobacco, etc. etc.

Surveys for industrial purposes.

I should say that the existing knowledge of available resources of the country:—agricultural, forest, mineral, etc., is not what it ought to be, and a liberal policy in regard to surveys, especially agricultural and mineral, would be of immense value.

III.—Assistance in marketing products.

Exhibitions.

I think exhibitions of all kinds should be started and encouraged by Government. They should be popular in character and as a natural sequence would aim at bringing sellers and buyers into contact.

IV.—Other forms of Government aid to Industries.

Supply of Raw Materials.

Government owned raw materials should be made available on the most favourable terms possible in order to encourage the establishment of new factories.

Land Policy.

The land policy of Government is certainly a check on the agricultural expansion of the province. There is, I understand, a desire on the part of the Government to prevent the landlord class from predominating. It is very good in theory to have only agriculturalists owning land, but such a policy is possible in theory only. There are a good many ways through which the small holder can and does pass his land on to the landlord class, and it is done in the majority of cases whether such a practice is sanctioned by Government or not. After all who are the landlord class but people of the country who have become rich through their own exertions?

To try and compel the lazy man to become industrious is an impossible task and giving him land or compelling him to hold his land will not mend matters. To allow no one but the agriculturist to acquire and hold land would do a great deal of harm to the country by retarding the development of land and extensions in agriculture notably with reference to paddy lands.

I think encouragement should be given to any one willing to develop land either for agricultural or industrial purposes.

I think the present law in this country for the acquisition of land for Government purposes is quite sufficient.

IX.—Other forms of Government action and organization.

Transport facilities.

Roads, railways, and waterways are very much neglected in this province. A great deal can be done to open up new agricultural and mining districts by constructing more roads and railways and making existing waterways navigable.

A railway connecting Moulmein with Tavoy is of vital importance. A survey has already been made and it is understood that there are no insurmountable difficulties. This line would open up a long tract of country known to be well mineralised and in parts very suitable for plantations. The Tavoy communications with Rangoon are at present very bad.

Mining and Prospecting Rules.

So far as the Tavoy District is concerned, where I have mining interests, I have no criticisms to offer on the working of the Mining and Prospecting Rules.

(*Witness did not give oral evidence.*)

Mr. H. Walkem.

WITNESS No. 431.

MR. H. WALKEM, *Superintendent, Government Reformatory School, Insein.*

WRITTEN EVIDENCE.

Pioneer Factories.

My opinion as to the utility and necessity of Government pioneer factories is based on acquaintance with the rubber plantation which under the management of a Forest Officer the Government established in Mergui and eventually sold to a private company during the rubber boom of 1909-10. The plantation before it changed hands accomplished the purpose for which it was established for—(1) it demonstrated that the soil of Lower Burma was suited to the cultivation of rubber as a profitable business, and (2) enabled novices to obtain within a short period all the knowledge necessary to run a rubber plantation.

Only those industries for which raw materials and labour can be obtained in the province itself should be pioneered by Government by the institution of pioneer factories. The adoption of these two conditions is suggested for the following reasons:—(*a*) There are extensive tracts of virgin soil waiting to be utilized for the cultivation of jute, cotton, etc. As these tracts are opened out factories could be started and thus a twofold sphere of suitable employment would be provided for the children of the soil, a fair and vigorous proportion of whom for want of suitable work are now in the provincial jails. The Burman loves to live on the land if it will maintain him and his family.

There are many reasons why the Burman in his own country should, in the opening stages of industries, be protected against the importation of cheap labour from India. It

should be possible to overcome the difficulty of skilled labour at the start by sending picked Burmans across to India to acquire the requisite knowledge in up-to-date factories which it is intended to reproduce in Burma.

(*b*) When pioneer factories begin to pay their way and yield dividends (considering they will be started and maintained from provincial funds) they should be sold only to those companies that employ a large proportion of local labour and capital and are willing to take in apprentices for whom Government might conveniently give scholarships. It will be necessary in this and other ways to guarantee the supply of skilled labour in increasing numbers if industries are to expand and become an asset of the province.

Since industries in which Government interests itself are established for the general good as opposed to private gain, Government should reserve to itself the right to retain permanently any factory, the utility and purpose of which in its opinion would suffer if transferred to private management.

Demonstration factories to teach locally how to manufacture rubber goods should be adopted as the supply of raw material will be steadily on the increase. Demonstration factories.

Commercial museums should be established in the business capital of the province with branches in important industrial centres under the control and management of an industrial committee. Once these are established the value of exhibitions would wane. Commercial museums.

The labourer to begin with should be given a sound primary education which should include such subjects as will train the hand and eye to work with speed and accuracy. Government vernacular schools should be semi-industrial in the primary stage, but altogether industrial above that standard. (Purely literary education might well be left entirely to Buddhist Monks.) In these schools the very best and most modern tools and machinery should be employed and scrapped as soon as they become out of date. Training of labour.

A boy who has passed through an industrial school when compared with one who has only passed through an ordinary school is—standard for standard—more intelligent and self-reliant than the latter and is able to get fairly good employment more easily.

Supervisors, etc., who have proved their efficiency and worth ought at intervals to be allowed to attach themselves for a maximum period of six months on full pay to any factory, which in the opinion of the head of the department is ahead of all others as regards equipment, plant and methods of work. When such hands visit Europe on furlough they should be allowed travelling allowance to enable them to visit works similar to those in which they themselves are employed. Practical training of Supervisors.

(*Witness did not give oral evidence.*)

WITNESS No. 432. *Mr. J. D McNeilage.*

MR. J. D. MCNEILAGE, *Technical Instructor, Government Engineering School, Insein.*

WRITTEN EVIDENCE.

Training of Labour and Supervision.

I was trained in the workshops of the Clyde Navigation Trustees at Dalmuir, Scotland, serving an apprenticeship of seven years and attending the evening science classes at Clydebank. Since completing my apprenticeship I have had experience in workshops at Home, at sea, in saw mills, rice mills, etc., and for the last ten years have been engaged here as Technical Instructor. I left the British India Steam Navigation Company in 1893 for work ashore in Burma so that I have been over 23 years in this province. As the result of my experience here I beg to submit the following:—

Q. 44. (*a*)—Yes, particularly in the case of pattern makers, engine fitters, machinemen, blacksmiths, carpenters and cabinet-makers. To be efficient in these trades men should be able to understand plain drawings and written instructions; when they do not, the European in charge has to see to every petty detail and this wastes time, adds to the cost of production and reduces the outturn. Whether lack of primary education hinders industrial development.

Q. 44. (*b*)—Nothing.

Q. 45. (*a*)—In most trades there is too great a gap between the highly trained European and the men he controls. They can learn little from him as he has not time to correct defective methods, and, as the maistry, or native foreman, is simply a higher paid native workman, his methods are the same. An intermediate class of foremen is required who would be with the men on the work, improving their methods and directing them when drawings or instructions were not understood. Such a class is now being trained in the Government Engineering School at Insein, and with a few years' experience these lads should be able to improve the men working under them and produce much better results than are now obtained. This applies to engineering in all its branches, but is true also of other industries. Steps to improve labourer's efficiency.

Q. 45. (*b*)—In all branches of engineering and kindred trades, *viz.*, pattern making, machining, engine fitting, moulding, carpentry, cabinet making, plumbing, etc., an apprenticeship of five years should be required, during which period the apprentice should be under the special care of the best workmen in the shop and under the supervision of the type of foremen mentioned in 45 (*a*).

With such an apprentice system it would be necessary *gradually* to shut out from these trades all who had not served such an apprenticeship, for if men are permitted to work without the worry and expense of an apprenticeship why should others serve one?

When men without proper training are permitted to work with trained men and more so with apprentices, they lower the standard of work, introduce slip-shod methods and ruin apprentices. They can be got at lower wages, but they are never cheap. To-day any Burman who can muster a saw, a plane, an axe, two or three wood chisels and a pencil calls himself a carpenter, even when he cannot read a common foot rule. These men have no training, there is no chance of a training for the Burman in carpentry as Chinamen monopolise the trade. During the troublous times that preceded and followed the annexation of Upper Burma, no one cared to have Burmans about him with their axes and other edge tools, and during this time the Chinaman got a footing that he has since maintained and extended.

If Government would exclude from their list of contractors all workshops and contractors who failed efficiently to train apprentices belonging to the province, we would soon have a very much improved type of workman.

Apprenticeship system.

Q. 46.—No special knowledge, unless the fact that I have served an apprenticeship of seven years, along with dozens of others who were doing the same and among hundreds of workmen each one of whom had served his time, can be classed as such:—

In mechanical engineering the apprentice system of training in force in Scotland seems to be considered satisfactory, if one may judge by the number of Scotch engineers found in all parts of the world. In Scotland with the Trade Union Spirit Strong, every workman feels it his duty to teach apprentices working with him and apprentices consider they have a right to expect instruction from the men. Here, in Burma, the men try to keep all information from the apprentices who are not of their own caste, race or creed, hence my remarks at the beginning of 45 (*b*). Prentices here are allowed to drift as they may, the Europeans have not the time to bother training anyone, and the workmen will not and often cannot train or teach anything. Large workshops here are managed—not by engineers – but by the office and the office is concerned *only* with this year's dividends and bonuses, not with the training of the men of ten years hence.

Qs. 47 & 48.—I know nothing of industrial schools.

Co-ordination of systems.

Q. 49.—The nearest to "day schools for short time employés" that I have any experience of is the Engineering School here. With us, students meaning to follow mechanical engineering enter the school in June and study there till December. In January they are sent to selected workshops and work there till June, back then to school till December and this programme is repeated for three years, after which the student continues in the workshop till he completes his full five years apprenticeship. These lads are much above the average workman and are really engineering students, the class referred to in 45 (*a*).

We have also an apprentice class getting the training I recommend in 44 (*a*); they are being taught drawing and simple estimating and must go through a short course in carpentry, smithy work and fitting before they are allowed to select, or before they are selected for one of these; their fitness for one or other is soon seen and they are then kept at that for the rest of their time. I cannot speak of results yet as our oldest apprentice is only in his third year, but they are very promising.

As for night schools, they suited us in Scotland, but whether they would succeed here at present is another question. In small workshops at Home the foremen pressed the lads to attend the science classes at nights and usually put them to work during the day on parts that they were studying in the classes at night. Had we the type of foreman here that I refer to in 45 (*a*) he could do much to make such schools a success, by encouraging lads who attended them.

Control of technical schools.

Q. 50.—Technical schools should be under a Department of Industries as this department would have information of a practical nature as to the needs of the country, be able to assist lads in the choice of a trade and be competent to say what should be taught and how it should be taught. It would keep in touch with the lads trained, watch their progress after leaving the school, then correct mistakes, alter and extend the training given so as to produce the training required.

In the matter of two departments working together in controlling industrial or technical schools, I am of opinion that technical schools should be under the Industries Department only. I cannot see where the present Educational Department could be of any service in such affairs and it is quite possible that much harm might come from dual control, but in the matter of ordinary education, the two departments should draw up a course of study suitable for lads intending to enter a technical school. To spend a third of a boy's time on Latin, French, Greek and literature generally and then thrust him into a technical school, weak in mathematics and utterly ignorant of physics and chemistry is common practice to-day, but it

is an awful waste of time, energy and opportunity. Latin, Sanskrit, etc., are studied for years, then forgotten in a few months, they are never used and during the rest of his life the man wonders why he was compelled to waste time on these things and yet never entered on studies of real importance. We require a course commencing at about the 5th standard that will lead up to the training in the technical schools. Physics and chemistry form the basis of practically all technical training, the schools should take these subjects up thoroughly and drop the study of dead languages in this live age.

Q. 51.—First of all, trades should be clearly defined so as to distinguish between trades and branches of these trades. A civil engineer is—among other things—a trained surveyor, but a surveyor, however well trained, is not a civil engineer. A mechanical engineer should be equal to any fitter in engine fitting, but a fitter is not a mechanical engineer, so if men for the superior grades are to be trained they should be trained as far as possible in all branches of that trade. These lads should have an education equal to the "Entrance" but without the burden of Latin, Pali, etc., and including physics and chemistry. They should then enter a technical school, study part of each year there and part with some firm carrying on the work the student intends to follow, serving a five years apprenticeship in all. Training of Supervisors and Managers.

As for training "Managers," I fear that cannot be done, the best training possible will not fit a lad to manage or conduct work on a large scale; capacity for managing comes to those who have the natural aptitude for it, through technical training and experience, experience being by far the greatest factor.

Q. 52.—None, unless Government intends to take over and work the industry. If private firms, that are to benefit by their workers studying methods in other countries, do not consider the gain worth the cost, why should the province be asked to pay for it. We have firms in Burma paying dividends of about 50 per cent. that do not spend a rupee on training anyone. Assistance to private employés to study abroad.

Q. 54.—In marine engineering there is; we have the Colonial and the Local Certificate; the Colonial certificate declares the holder qualified to have charge of engines in any sea, but the Local certifies him capable of taking charge of the same engine only on the coast of Burma. In the Indian Empire, Calcutta, Bombay and Singapore issue Colonial certificates, so an engineer sailing between Rangoon and Madras or any other port save the three named, has no chance of examination save for the useless Local Certificate. Rangoon in this matter is treated as a place of no importance and this has been complained of by marine engineers for over 20 years to my knowledge. Board of Trade examinations are held in Glasgow and in Greenock, towns only 19 miles apart, with good railway connection, but Rangoon over 600 miles from the nearest examining centre, is not yet considered of sufficient importance to have examinations for Colonial certificates. Mechanical Engineers.

In the examination for land engineers, there was a want of uniformity, whether that is so now I cannot say. These tests should be the same not only for the various provinces of India but for the British Empire.

If the Board of Trade can standardize examinations for marine engineers so that certificates issued in New Zealand, Australia, Singapore, Glasgow, Belfast and London have all the same value and are all accepted throughout the Empire, surely the same can be done with land certificates. The skill and training required to take charge of boilers and engines is the same no matter where the boiler and engine may be erected and any certificate issued by the British Government should hold good throughout the Empire.

On many of the other questions I have opinions but without experience to give them weight, or me confidence to express them.

(*Witness did not give oral evidence.*)

WITNESS No. 433.

Mr. S. S. Halkar

MR. S. S. HALKAR, B.A., LL.B., *Pleader, Chief Court, Rangoon.*

WRITTEN EVIDENCE.

I.—*Qs.* 1 to 14.—I started a company to manufacture acetic acid from wood distillation. The difficulty in raising the necessary capital arose from the people's diffidence as to the success of the business. People would invest capital if Government guarantee proper management and successful and scientific organization of the business.

I am sure supply of machinery and plant on the hire-purchase system would encourage many industries. Financial aid to industries.

Provision of part of share capital, guaranteeing dividends or purchase of products may be necessary in dubious industries but not in all cases.

Government control may be necessary to create confidence in the proper conduct of the industries even where Government assistance is not taken up. Government should pioneer industries which are new to the provinces and which people would not easily take to being unfamiliar; joint-stock banking is practically non-existent in India.

Including head offices and branches, there are approximately 354 banking offices located in various parts of the country giving little more than one banking institution to one million of the population.

1. Taps the hidden wealth of India.

2. Create confidence of people in banks so that they may take their money to them and place it there, Government should guarantee these investments and deposits and dividends.

3. State financing need not necessarily mean helping from funds belonging to the State. It can be done in a manner which would procure the capital from the industrial enterprises themselves, *e.g.*, by giving credit facilities to industries at opportune moments.

4. In some cases Government may play initially an important part and pioneer new industries and hand over the same to syndicates formed by the people at cost price or at a premium. The industrial banks should give free credit to the registered industries; credit is capital.

Industrial co-operative societies may be formed in each taluk and district to control and encourage minor cottage or home industries. Proper management should be guaranteed by the Government.

Answer to question 14 is in the negative.

echnical aid to idustries.

II.—*Qs.* 15 to 27.—There should be one scientific and technical research institute in every province, maintained partly by the State, partly by the municipalities and people of the respective province. The experts from such institutes should be freely available to new industries until established, only on payment of the travelling and boarding expenses of the expert and nothing more. Permission of the private concerns would suffice to publish results of research. Demonstration factories should form part of such institutes.

Research abroad may be necessary in highly intricate matters of inventions not in ordinary industries in which Japan and Germany are exploiting India.

Question 25, etc.—Existing survey reports being written in English technical terms are not within the easy reach of the masses. They should be published in simple vernaculars and should be amplified in many places; they are imperfect now.

ssistance in arketing products.

III.—*Qs.* 28 to 39.—Commercial museums such as those in Calcutta should be established in every province side by side with the demonstration factories and the science and technical institute. Products of minor and unorganized cottage industries may be sold by auction once in a quarter or six months and the traders or merchants may purchase and sell at other provinces at a profit. For some things which would fetch proper prices at distant markets, Government may establish sale agencies and trade representatives; banking facilities should be offered very freely. See II.

and policy.

IV.—*Qs.* 40 to 43.—The present land policy, at any rate in Burma, requires a thorough change. I purchased about 4 acres of land on the other side of Pazundaung Creek from a Burman who held an agricultural lease of it; I wanted to have my Acetic Acid factory there being close to the river, but I could not do so as I would have had to pay an enhanced tax of about Rs. 800 per acre instead of Rs. 4 per acre. I cannot even put a small building on it. Such policy discourages industries. Every concession regarding land should be given to the industries, provided the industries are situated in industrial zones, *i.e.*, not injurious to the health of the people.

Training of labour nd supervision.

V.—*Qs.* 44 to 55.—I personally worked in a Bombay cotton mill after graduation as an apprentice with a view to pick up the subject and become the manager. The then manager would not freely teach me; I fitted up all the parts of the machinery; still I did not understand it thoroughly; my experience is that theoretical training co-ordinated with apprenticeship would be better than apprenticeship alone.

The hereditary system, I mean son following the father's occupation from the very childhood, is very useful training, *e.g.*, as a carpenter, smith, engineer, labourers should be compelled to attend night schools at least for an hour a night and employers should be compelled to arrange for the same even by deducting a rupee or so from their monthly wages and promising promotion or better prospect as an encouragement and reduction on failure to learn.

Official organization.

VI.—*Qs.* 56 to 62.—Certainly there should be in each province a Board of Industries attached to the science and technical college and demonstrative factories previously referred to. This Board should not only be advisory but itinerant and missionary—I mean should tour round the province, hold lectures, preach to the leading and middle classes in vernacular and English about the prospects and investment in particular industries and wake up the people, *e.g.*, a chemist or a geologist instead of lying in his laboratory or house must go round and demonstrate to the people of different districts and localities, and organize necessary companies to start the industries; then they should foster the industries by occasional advice and inspection. In some cases they might require to be managing directors till others are trained. There should also be an expert official Director of Industries with necessary assistants and accountants who should see to the management of all registered industrial concerns in the province. This Board should have executive powers and should have power to recommend State financial help when necessary.

VII.—*Qs.* 63 to 81.—*Education.*—The whole system of education requires a drastict change. It should be compulsory science and economic education, commencing right from the elementary classes and not rivetted to the university or post-graduate stage as is done in the Tata's and other institutes. The texts should be of the series known as Science Readers instead of Royal Readers, Fables or Novels. Economic lessons should be interspersed in the science readers and these readers should be translated into vernacular readers to be taught in vernacular classes which would be repeated in English classes but in greater detail and with better performance of experiments. The books should be taught with interesting experiments to the boys who would take greater interest in observing than in the present system of mechanical cramming dry verbose strings of words. They would attract larger number of children to schools, so the curriculum of vernacular, Anglo-vernacular and College studies should be consistently based on this scheme and the subject should be made attractive by organizing lectures in vernacular impressing the practical application of science to life and to economic developments. This system would revolutionize the present deplorable state : 95 out of every 100 are illiterate: 75 out of every 100 go without chance of attending school, 999 out of 1,000 pass through the world without even elementary instruction in science and only about three in a lakh go through an ordinary regular course in science and as a result our average life's span is not more than 23 years whereas in advanced countries it is 45 to 50 years. Organization of scientific education.

Unless some such scheme to train the students from the beginning is devised it will be difficult to find intelligent and promising students to take up technical subjects. There should be institutes of science with technological departments in every province; of course in the most advanced ones on a large scale. An imperial one may be one in the whole country; but there should be provincial ones also; subjects of experts' research of study would depend on the natural resources to be developed in each province.

Reference Libraries and College of Commerce must be added to the Main Institutes previously referred to. Everything should be within the easy reach of the students without travelling over to other provinces which very few can afford to do.

I have seen the Indian Institute of Science at Bangalore; it helped the organization of the sandal wood Oil Factory there; it can help the start of hundred other industries if only the professors and students tour round and approach and enlighten the leaders of the people about promising industries and investments rather than confine themselves to their quarters and wait for the invitation from people.

VIII. *Qs.* 82 to 88.—These publications should be by way of cheap directories in vernaculars and they should occasionally appear in the ordinary local newspapers. The journals should be in vernacular and the itinerant missionary experts should make use of these statistics to impress on the people advantages of their respective industries. At present very few people know where to get the necessary commercial intelligence though there is a Director General of Commercial Intelligence. Official publications

IX. *Qs.* 89 to 108.—The Registration certificate, Patents and Company Registration should be made as attractive and cheap as in Japan. People should be initially helped by the Government to have their own companies of steamers, as at present, owing to want of competition, people have to pay heavy freight, and their trade and industry are handicapped. Care should be taken to see that larger companies don't kill the smaller companies by foul means. Other means of Government assistance.

Q. 102.—Government should float companies, and after giving the people fair chance of investing their moneys by purchasing the shares, Government should make up the deficiency by loans and make use of all the rivers and waterfalls useful for such purpose and demonstrate to the people the utility of such power to various industries; Indians of the present day would be very slow to take the initiative unless the Government preach and get them to start such things as has been done in the case of Agricultural Co-operative Societies.

Q. 103.—I have spent and lost a large amount in my Wolfram Concession at Tavoy and I know many of my friends have also suffered. This would not be the case if the Government geologists and experts were freely available to the people whenever necessary at a small cost of bearing their travelling and other incidental expenses. People's impression at present is (though they may be wrong) that their help is not available at all. In fact some of the Government geologists hesitate to see the Indian concessionaires at Tavoy and Mergui. I would say the Government geologists are treating their investigations as great secrets from the mining adventurers with the result that thousands of rupees are lost by the people in working wrongly or at places where they ought not to have worked. Government have engaged one geologist for advising petty concessionaires, but their impression is that he came to their mines to report against them rather than to help them. The ground rent and the initial license fees should be altogether abolished, increasing the royalty on the output if necessary.

X. *Qs.* 110 to 113.—I have been Chairman of the Board of Directors of the Nathsingh Oil Company for the last four years more or less. If the Government would guarantee proper honest and intelligent management of the registered companies, people will form new Oil Companies. All the goods, toys, glassware, etc., imported at present from Japan are producible in India and Burma. The dyes can be made from the natural resources here with sufficient knowledge of Chemistry. General.

Sugar industry on a large scale would be successful. There is ample field for several more companies like Tata Iron and Steel works. India is self-contained as regards raw material even regarding coal or any such fuel.

Considering the fact that the State Forests in British India aggregate nearly 250,000 square miles or more than one-fifth of the total area under English administration, and the fact that the Revenue which India draws from the forests is put at about a million sterling annually after all the expenses are paid, which works out at the ridiculously low figure of less than two annas an acre, I would say that there is ample scope for development of Indian forest industries.

Wood distillation, dyes, tans, gums, resins, camphor, grasses for paper pulp, bamboo industry, etc., should be started and rapidly developed. For this purpose forest development should, like irrigation, education, etc., be made imperial instead of provincial.

(*Witness did not give oral evidence.*)

Mr. J. D. Clifford.

WITNESS No. 434.

Mr. J. D. CLIFFORD, *Deputy Conservator of Forests and Director, Burma Forest School, Pyinmana.*

WRITTEN EVIDENCE.

II.—Technical Aid to Industries.

Surveys for industrial purposes.

Large areas of forest land still require to be surveyed. Surveys (4″=1 mile) should be made as quickly as possible for (1) all forest reserves, and (2) important unclassed forests. This work is best carried out by the Forest Survey branch of Indian Survey Department, and for it to be carried out within a reasonable period a considerable increase of trained staff will be necessary. The cost should be borne by the Forest Department, but no immediate increase of revenue can be expected. Not until such maps are available is it possible for reliable forest working-plans to be made and without such working-plans timber cannot be extracted to the full capacity of the forests without detriment to their capital value.

V.—Training of labour and supervision.

Lack of primary education hinders development of forest industries, such as—

(*i*) felling and extraction of timber,
(*ii*) cutch boiling, and
(*iii*) charcoal manufacture.

The methods at present in vogue are extremely wasteful, were most of them practised before the annexation of Upper Burma, and scarcely no improvement is perceptible in the last ten years.

Technical education.

My experience of technical education extends over four years only and is limited to the Burma Forest School. This institution is more in the nature of a training school than a technical one. It is directly under the ægis of the Chief Conservator of Forests advised by a Board of Control, which has for one of its members an officer of the Indian Educational Service. The latter is purely advisory. I am unable to suggest any better method of control. There are two courses of instruction in forestry and cognate subjects, one entirely in English and one entirely in the vernacular. I regard the vernacular training as very important even though it has to be very largely imparted by forest officers whose mother tongue is English. The English theoretical course is more advanced than the vernacular, but the practical training with a few exceptions is identical. The latter training is spread over the whole two years' course and extends over seven months in each year.

In my opinion a great deal might be done by Government to assist primary education by establishing well organized vernacular training schools. They should be directly staffed by selected imperial and provincial officers of experience.

IX.—Other forms of Government action and organization.

Transport facilities.

Lack of properly graded forest cart-roads prevents extraction of large quantities of valuable timber other than teak. Such timbers as pyinkado, in and kanyin, and many other valuable species whose timber will not float, in order to be placed on the market cheaply, are dependent on extraction roads as mentioned.

The Forest Department should be allowed to spend more money annually on this work, regardless of increase of revenue which, however, would, undoubtedly, take place within a few

years of the completion of connected schemes of road construction. I consider the Forest Department should bear the cost only of those roads actually within unpopulated forest areas, all connecting roads outside these limits being paid for by district funds.

As regards timber I am of the opinion that more extensive use of mechanical appliances should be made in order to avoid expensive elephant power. The latter cannot be entirely superseded but should be restricted to work in floating streams and small depôts. Block and tackle extraction with the aid of buffaloes might be greatly extended, even in the hilly forests, as has been done in parts of the Pyinmanà forest division and, I understand, in the Prome division. Assembling raw products.

Portable tramways, skidders and jacks are not used by lessees to the extent that they ought to be, and no doubt would be, were competition more keen and large profits in timber extraction not so easily made.

Planting of teak could be carried out by the Forest Department on a much more extensive scale, but not with advantage unless staff and expenditure be increased. No appreciable financial return from teak plantations need be expected for the first fifty years, and it is by no means certain that the amount spent in the costs of formation could not be more profitably spent in other ways such as increasing the growing stock of this species in existing natural forests. As yet no teak plantations have reached maturity in Burma, though from experience in Java teak can be profitably grown there in artificial forests. Concentration of special kinds of trees.

Timber for special industries such as matches and packing cases should be grown in extensive experimental plantations forthwith. Fuel plantations of considerable area are desirable in certain localities, and the question of making these a form of communal or village forest, I believe, is still under consideration. Experiment in these is, however, badly needed and might avoid much waste of expenditure in future. It is impossible for the research officer to carry such out on a commercial scale, and I recommend the appointment of a special officer for such work advised by the Forest Research Officer.

(*Witness did not give oral evidence.*)

Mr. M. Hunter.

WITNESS No. 435.

Research.

MR. M. HUNTER, M.A., C.I.E., F.C.S., *Principal, Rangoon College, Rangoon.*

WRITTEN EVIDENCE.

I think it may be taken for granted that a considerable extension of research work in connection with raw materials in Burma is urgently required, and under present conditions it seems hopeless to expect any such extension except by direct Government enterprise and control. Three main lines of research seem indicated: (1) agriculture and agricultural products, (2) forest products and (3) minerals and mining. The present Agricultural Department is Provincial, but requires large extension to cope with all the work required in the Province, the Forest Department is Imperial and the members in Burma are engaged in administrative not research work, while the Geological Survey Department, which has done so much for the development of the Province, has to cater for the whole of India and cannot give that attention to detail which the Province demands.

On the whole I am in favour of Provincial experts in various subjects as against Imperial ones, and as a corollary Provincial departments rather than Imperial ones. It is true that the member of an Imperial service may take a wider view than the member of a Provincial one but the balance of advantage in favour of the Provincial expert lies in his continual presence in his Province, ever ready to take up any subject which may be mooted, his familiarity with the language, customs and habits of the natives of the Province and his natural feeling that the development of the Province is to him a matter of personal concern. The local experts ought to be able to get into touch with workers in the United Kingdom whose work lies on similar lines, (possibly the Sub-Committees of the Advisory Council of Research might be the advising medium) as in many cases they will be working more or less alone and without access to good libraries, hence difficulties may arise which can be easily settled by reference to experts who are in a position to command the use of extensive libraries and to discuss problems with men engaged on more or less similar work. Provincial experts necessary.

I am not in favour of loaning a Government expert to a private firm in the sense that he should be a servant of that firm. If a firm applies for help from a Government expert and such help is given the results should be the property of Government which should decide whether it would or would not be desirable to publish them. Publication of result of researches of Government expert with private firms.

As regards Technical and Industrial schools (as distinct from Technological Colleges or Institutions) I think that the Department of Education should control them, there should however be members on the Visiting Boards or Governing Bodies of these schools representing the Department of Industries to prevent the almost inevitable tendency of the Education Department to make the courses too theoretical. Control of technical and industrial schools.

I think it desirable to establish in Burma a Board of Industries with executive powers and budgeted funds. At the start the Director should be a non-expert official with an Board of Industries.

extensive knowledge of the Province and good administrative ability, later on a technical expert from the staff of the Board might well be made head. The duties of such a Board might well be—

(1) To direct the technological College or Colleges;

(2) To collect information regarding present industries and to suggest methods of development and carry out research on points connected with these industries.

(3) To collect information regarding the raw products of the Province, undertake research work on them and suggest and encourage the establishment of new industries in connection with these products.

(4) To collate the work of Government experts not attached to services already established.

The Board should be the medium of communication between the experts employed and the Boards in other Provinces and also provide the channel for referring questions to authorities in the United Kingdom.

Technical aid.

Apart from the Agricultural Department there is no technical or scientific Department (exclusively confined to Burma) which can give technical aid to industries.

Provincial experts.

I have suggested above a Provincial Board of Industries rather than an Imperial one. The Local Government should have, as it has now, its own agricultural experts attached to the Department of Agriculture, it should have also experts for mineralogical survey and mining engineering, for examination and research on forest and other vegetable products and most important of all trained research and technical chemists. The research work should be done in a Technological College or Institution (see below). The experts themselves should be permanent Government servants, their pay should be liberal and the prospects good in order to attract capable men, it is, however, no use expecting to obtain men of long experience and wide reputation as such men will not give up their chances in the United Kingdom. The Technological College or Institute might well be modelled on the Manchester Municipal School of Technology, as a teaching institution with proper administration and equipment will, as a rule, do better research work than a purely research institution.

Technological Institute.

The main feature of the administration of such a school or institute should be that the heads of the different branches should not be overburdened with routine teaching as is the case in practically every Arts College in India, they must have ample times for research and opportunities for introducing their own students and, when suitable, students from other colleges to methods of research and for teaching such students to give them help in the various researches they are conducting.

Indian Science Congress.

I have no personal acquaintance with the Indian Science Congress, but it seems to me that it can give important help in developing the technical research described above by providing at its annual meetings a common meeting ground for the workers in the different Provinces. The scientific experts of each Province should be encouraged to attend the meetings and a short resumé of the work done in the different Provinces should be given. If this is done overlapping of research work in different Provinces can be avoided and no special Board need be established to prevent it. Apart from this, such meetings will have a stimulating effect on the expert workers. Not only will they learn what work is being done in the various centres, what difficulties are being encountered and how they are being met, but also they will have an opportunity of discussing the different aspects of their work with others engaged on more or less similar lines and such discussions cannot but be beneficial.

Reference Libraries.

Here in Burma the absence of a good technical library with sets of journals as well as standard technical works is much felt. Such a library should be established in Rangoon as a branch of a large free library which should receive ample support both from Government and from the Municipality of Rangoon.

(*Witness did not give oral evidence.*)

Tavoy Chamber of Mines.

WITNESS NO. 436.

TAVOY CHAMBER OF MINES, *Tavoy.*

WRITTEN EVIDENCE.

Preliminary report to the Indian Industrial Commission.

The Chamber has had under consideration the circular entitled "Preliminary Note on the Scope of Enquiry by the Indian Industrial Commission" and a report has been submitted by the Sub-Committee appointed to consider the circular. Examples and specific instances to support the opinions of the Chamber will be given when required but for the present the points raised have been dealt with in a general way.

With the exception of one or two matters which are of interest to the Tavoy district it was decided to confine attention to questions bearing on mining, and in particular to those relating to the wolfram industry.

Introduction.

Of the points raised in the introduction in the Circular, clause (*d*) was the only one on which the Chamber expressed their opinion. This was to the effect that any arrangements by which information of what was being done in other mining fields, and in particular of the most economical methods of extracting wolfram concentrates, would be of great advantage. The Mining Adviser of Tavoy, having familiarised himself with the literature of other wolfram mining fields, could send occasional notes to the Chamber for circulation and these could possibly prove very helpful. The Chamber, in conjunction with the Advisory Board, has arranged a series of lectures which will probably prove profitable in this direction to the mining community.

Collection of Preliminary Information.

The Chamber is of opinion that most of the information likely to be required by the Commission is now available and could be imparted (1) by answering in writing specific questions put by the Commission, (2) by replying through a representative appointed by the Chamber to appear before the Commission if that is found necessary, or (3) by replying in writing and through its representative.

It was decided that should any members of the Commission pay a visit to Tavoy the Chamber would do everything in its power to supply all information required, and to arrange visits to the mines of the district.

Development of Official Administration.

Mining and Metallurgical School.

The opinion was expressed, when considering paragraph 11 under this section, that it was desirable to institute a Mining and Metallurgical School to form a part of the present Engineering School at Insein and to grant diplomas for proficiency in these subjects. The training should be largely practical and part of the students' time should be spent on mines in the Tavoy district. Scholarships should be granted under a scheme that would safeguard the interests of Burman students.

Pottery and silk-weaving.

Pottery and silk-weaving are two Tavoy industries that might be added to those enumerated under paragraph 11.

Under paragraph 15 (*b*) the opinion was expressed that an annual publication, dealing with the Tavoy wolfram industry and edited by the Chamber in collaboration with the Mining Adviser, would be very useful and would help to focus attention on the district.

Geological Department publications.

Under (*b*) the Chamber desired to record their appreciation of the publications of the Geological Department of India and to state that certain members had found them most helpful to the mining industry in general.

Industrial exhibitions.

Under (*c*) it was the opinion of the Chamber that periodical industrial exhibitions, such as the one held at the end of 1916 in Rangoon, are a great success.

Land acquisition.

Under (*i*) the Chamber wished to record their opinion that the present law for acquisition of land on behalf of industrial companies required revision especially in respect of the rights conferred and the limitation of the areas.

Government Aid to Industries.

Financial assistance.

It was the opinion of the Chamber that occasions arose when small owners should receive financial help and that the Advisory Board could advise Government in such case.

Under (*d*) the opinion expressed was that Government should be prepared, in certain emergencies, to cope with sudden and temporary difficulties, such as occurred at the outbreak of war. A neighbouring Government was able to save its country from disaster by fixing a minimum price for tin-ore and buying large stocks when the price reached this minimum.

Technical and Scientific Work.

Labour.

Under (*a*) the Chamber was of opinion that much could be done to improve the labourers' efficiency and skill generally, and that the Government should be more ready and willing to take the advice of mining experts of wide experience, and more prompt to carry out suggestions which would be helpful.

Study abroad.

The Chamber was of opinion that opportunities should be given to Government officials in charge of Mining districts and technical experts of private firms to study conditions and methods in other countries, and that only Government officials with special mining knowledge should be allowed to act as Inspectors of Mines. The practice of appointing non-technical

men as Inspectors of Mines was harmful to the industry and placed the Government in an undignified position.

Advisory Council for Research.

Under (*f*) the Chamber was of opinion that an Advisory Council for Research for India on the lines of the Council appointed lately in the United Kingdom, could prove of great usefulness.

General.

Under (*e*) the Chamber expressed the opinion that local difficulties had been noticed under the mining and prospecting rules referred to.

SUPPLEMENTARY WRITTEN EVIDENCE.

Q. 25.—In respect to minerals, yes.

Q. 26.—(1) Can be best replied to by the Survey Department who have considerable experience of organisation and conduct of surveys.

(2) To supply maps of country hitherto unsurveyed, an officer of the Geological Survey should accompany the party. Topographical information could then be augmented by geological data and the two published simultaneously.

Q. 27.—By publication. A stock of all Burma maps issued should be kept in Burma for sale, say, by Government Printing Depot.

Q. 40.—So far as Tavoy is concerned, all timber on mining concessions cut in connection with mining operations should be free to concessionaires.

Q. 42.—*Mining Industry.*—Government should satisfy themselves that concessionaires will carry out Government requirements with regard to the working of areas. The present limit of 5 square miles is inadequate.

Q. 43.—(*a*) Government could assist small mine-owners by financial assistance in respect to the construction of surface water courses for sluicing purposes on the recommendation of the Mining Adviser.

Q. 87.—(1) Are of value in disseminating useful information.

(2) None.

Q. 103.—With regard to mining rules, a draft of rules made for Tavoy is at present under consideration by Government and the Chamber of Mines have discussed these rules and forwarded recommendations.

Q. 104.—*Wolfram.*—Government should carry out experimental underground research work with the object of ascertaining proof of the existence or otherwise of wolfram at depth in various parts of the district.

Q. 105.—Refer to reply under Question 40.

ORAL EVIDENCE—24TH JANUARY 1918.

The TAVOY CHAMBER OF MINES *was represented* by—

1. MR. E. J. HOLBERTON.
2. ,, C. M. P. WRIGHT.

Hon'ble Sir R. N. Mookerjee.—*Q.* I want to ask you a few questions about the Forest Department. From your experience do you find any difficulty about the present rules of the Forest Department for commercial purposes? *Mr. Holberton.*—*A.* I think the rules under the Forest Act are all right when they are reasonably administered. It depends upon the administering officer really. On the whole, I should say that we have found no really serious trouble. The trouble you get is in the matter of details which probably would not interest you. Forest operations are frequently held up because the Forest Department subordinate staff do not go round and mark the logs. Really our greatest trouble with reference to the Forest rules is that logs cannot be moved until they have been marked by a forest official, and he sometimes keeps us waiting two or three weeks or even months and holds up the whole of our European assistants until he arrives. He is a man on probably 12 or 16 rupees a month.

Q. And this matter was represented to the officers of the Forest Department?—*A.* We have often complained about it locally and we have discussed it with the leading men in the Forest Department, but we never made very great fuss about it. On the whole, the Forest Department treat us well. These small matters of delay are merely a little annoyance, but the Department do not seem able to remedy them.

Q. Is any particular area given to any particular firm or are two or three firms allowed to cut trees in one area?—*A.* Under the present system of allocation of forests working rights are either given to a firm or taken up by Government. You do not get two or three firms working together.

Sir F. H. Stewart.—*Q.* Are the leases permanent or only for a given number of years?—*A.* I am talking of teak leases. They are 15-year leases with an option to renew, subject to an agreement on certain points, for a further period of 15 years.

Q. Lessees' option ?—*A.* Option on both sides. You have to agree on certain points.

Hon'ble Sir R. N. Mookerjee.—*Q.* Is the royalty you pay reasonable ? There is no complaint about the royalty they charge ?—*A.* Royalty has gone up, but so has also the price of timber.

Q. Does the royalty go up and down according to the market ?—*A.* No. In the last lease we paid a considerably less amount than we pay at present. There has been a proposition put up by the Chief Conservator of Burma for a sliding scale, that is to say, to alter the scale of royalties during the course of a lease according to the rates obtaining at Government auctions here, but speaking of my own firm personally we are very much against that because we like to know where we are for a period of years.

Q. That is not yet in force ?—*A.* It is only under discussion.

Sir F. H. Stewart.—*Q.* It has been suggested to us that the Burma Forest Department is very weak on the commercial side and it is recommended that there might be a commercial cadre introduced into it. Would you subscribe to that opinion ?—*A.* It very largely comes from me. Speaking of the forests administered by firms, the divisional forest officer has not only to look after his silvicultural and other work but he has also to supervise the work of the lessees and when you get higher up, all these subjects of discussion about the terms of the lease are almost purely commercial questions and sometimes have to go through him. We maintain that he ought to be a silviculturist and there should be another man to whom purely commercial work should be entrusted.

Q. It has been put to us elsewhere that in the senior grades the Forest Service is very much understaffed. Would you agree with that ?—*A.* I should most certainly, in Burma.

Q. And your remedy would be to relieve the senior officers of the commercial side of their work ?—*A.* Yes.

Q. How would you do that ? Would you recruit commercial men for that particular work, or would you select some forest officers and give them a certain amount of commercial training ?—*A.* Either you would recruit your commercial assistants to begin with, or you would do exactly as they do in the civil department, that is, after a man had been a couple of years in the Forest Service you would put him either on the silvicultural side or the commercial side.

Q. If you recruited a commercial man pure and simple you might not get a good enough man because his prospects would not be good ?—*A.* That is why I should like to favour the other alternative.

Q. Similarly about the engineering side, we have been told that the Forest Department is very weak in engineering problems and proposals have been made in certain places that engineers should be associated with the Forest Department.—*A.* I have heard that view very strongly expressed by the present Chief Conservator of Forests and also by another senior Conservator, Mr. Leate, who has great engineering leanings himself, and I have heard both of them say that they are hampered by lack of engineering assistance in their staff.

Q. Are there any engineers associated with the Forest Department now ?—*A.* No. I think none.

Q. Do you have difficulties in the way of transport of your timber ?—*A.* Transport from the forests to Rangoon the whole way ?

Q. Yes ?—*A.* Difficulties vary with every different area. On the whole we manage to evolve ways out of difficulties without professional engineering.

Q. You solve the difficulties yourself, but is there anything which Government could do to help in the way of removing these transport difficulties and in the improvement of waterways ?—*A.* Outside Rangoon, Mandalay, Maymyo and a few leading towns there are no roads at all in Burma and the movement of timber by road is along the road made by oneself.

Q. And in your own forests you make your own roads yourself ?—*A.* Yes and we have spent thousands of rupees on the improvement of waterways for floating and on blasting operations.

Q. You are quite content to do that yourself and you do not think that Government ought to do it for you ?—*A.* We do not think we can call upon Government to go into the recesses of the forests, but when you come to the more populous parts Government should have more roads.

Q. Do you use aerial ropeways ?—*A.* We have not got any yet. We had them under consideration but we have not got them yet.

Q. Then there is a complaint that the Forest Department interferes to a certain extent with private enterprise and competes with it. Have you any remarks on that subject ?—*A.* If you talk to some of the forest officers they will tell you that the whole of the forests of Burma ought to be worked commercially by the State. You naturally would not expect timber firms to agree to that, nor do I personally think that it is at all a sound commercial proposition because the sums involved on it would be much greater than Government would be justified in risking.

Q. Have you suffered from Government competition in that way?—*A.* When you say 'suffered,' no. They work a certain amount of the forests of the country and I do not think that any of the timber firms have any particular point to make against that at all so long as it is not unduly extended. The Chief Conservator has been trying to help us.

Q. You are satisfied with the things as they are?—*A.* Yes.

Mr. C. E. Low.—Q. With reference to the question of communications, taking the point at which Government assistance on communications might come in, which you would put outside the forests or outside what you would call the recesses of the forests, do you think, speaking quite generally, roads or light railways, portable railways or removable railways are the best things?—*A.* I am perfectly certain that in the not so distant future when all these woods in Burma are being really exploited there will be a network of light railways which would probably be put up by mutual co-operation between the exploiters and Government. I should think that is the way in which they could assist most by light railways.

Q. And you think, speaking quite generally, that light railways would be a more suitable line to go in for than roads?—*A.* For the actual extraction of timber roads are not of very much use. I should think that light railways would be much more useful because heavy timber traffic would be too great a strain on anything but the very best *pakka* roads.

Q. In fact, where the traffic does not warrant a light railway, it is scarcely worth while having a road for the extraction at any rate of heavy timber?—*A.* No, that is to say, you do not want more than the *kacha* sort of road that is made.

Hon'ble Sir R. N. Mookerjee.—Q. Taking, on an average, Rs. 30,000 per mile of light railway do you think it would pay to have a light railway?—*A.* My figures do not agree with yours. I think I could put it down cheaper than that.

Q. Only carrying logs?—*A.* No passenger accommodation but carrying logs. Our figures show something like half the price you mention.

Q. What section of railway do you propose to put up there?—*A.* We have not built any. We have only prepared plans. We had got a lot of estimates before the war.

Sir D. J. Tata.—Q. Have you given any thought to a monorail for bringing stuff out?—*A.* We once had a lot of experiments in connection with a special type of monorail invented by one of our men but he did nothing. But I would not condemn monorails for that.

Mr. C. E. Low.—Q. It is usually a case of small ridges or hills, 200 or 300 feet high, or is it big hill side slopes of 2000 or 3000 feet altitude?—*A.* Though usually the ridges are not more than a few hundred feet high we do work in forests where they run up to 3000 feet or more.

Q. There would not be much scope for ropeways?—*A.* There is a really not, and also when you come to teak the amount of timber that you have to move over any particular track is small. Teak is so sporadic. You get a few on one little hill and a few on the next so you cannot afford to put up your light railways to transport these few logs.

Q. Do you lose very much by having to cut down your timber in length?—*A.* Commercially we lose very little. If you mean loss in cubical contents of timber you might say it is practically nothing, and if you say commercial loss it is also practically nothing.

Q. Do you get timber very big in girth?—*A.* The girth of the biggest teak log I ever saw was 23 feet.

Q. One witness whose written statement we have seen was objecting to the amount of check exercised by Government on floating logs having to be pulled into different stations and detained unnecessarily. What is your opinion of that complaint?—*A.* We can only say that we personally have not been seriously hampered by it.

Q. With reference to any scheme of Government improvement of forest communications of the more or less permanent type, do you think that it would be desirable for Government to do that as a case of capital outlay by loans instead of, as at present, out of revenue?—*A.* You mean entirely in the areas exploited by themselves?

Q. Yes. Supposing they pay anything to you or do it themselves, then should it be taken up as a piece of capital expenditure and financed by loans which would be repaid within the period within which the improvement would hold good.—*A.* We should do it that way ourselves if it were a big outlay.

Q. Supposing it were a question of putting up a certain length of removeable railways you would deal with it as capital expenditure?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—Q. In reply to Question No. 27, you say, "A stock of Burma maps should be kept in Burma for sale, say, by Government Printing Depôt." It is always done everywhere in India?—*A.* It is not done here. You have to write to the Map Office, Calcutta. I believe I am right in saying that quite recently, perhaps after this was drafted they have opened a map office in the Secretariat. We have had to write to Calcutta for all the maps that we want.*

Q. In reply to Question 40 you say, "So far as Tavoy is concerned all timber on mining concessions cut in connection with mining operations should be free to concessiona-

* *Vide* Correspondence printed as Appendix.

ires." Does it include valuable timber like teak and other timber ?—*A.* The present position is that they give us free all timber excepting a few reserved trees.

(*Mr. Wright.*—The best timbers would naturally be reserved teak, etc.)

Mr. C. E. Low.—*Q.* Do you find, as a matter of fact, that in respect of these reserved species the Forest Deparment holds you up by delay in getting work done?—*Mr. Wright.*—*A.* They invariably delay. The staff is not sufficient.

Q. In particular, in mining propositions?—*A.* We personally had no trouble at all with the Forest Department, but I believe the Deputy Conservator has been given instructions to leave us alone to a large extent and there is practically no teak at all in Tavoy.

Q. Because you are working under special war conditions?—*A.* Yes. These would apply after the war also.

Hon'ble Sir R. N. Mookerjee.—*Q.* You say in answer to Question 42 that "the present limit of five square miles is inadequate." Generally is it not ten square miles?—*Hon'ble Mr. H. Thompson.*—Five square miles in the case of wolfram.

(It was stated that this question had better be discussed in the conference with the Provincial Industrial Committee.)

Hon'ble Sir R. N. Mookerjee.—*Q.* In answer to Question 43 you say "Government could assist small mine owners by financial assistance in respect to the construction of surface water courses for sluicing purposes on the recommendation of the Mining Adviser."—*Mr. Wright.*—*A.* The cost will not be great. Suppose Government wished a larger output of wolfram. The smaller mine owners have to a certain extent taken out some amount of wolfram in the concessions already given and I do not think that many of them own capital and if Government wish to get out more wolfram, the extraction of wolfram is held up on account of want of capital and it would be necessary to assist them.

Q. Would it not be necessary to cancel such concessions?—*A.* Then there would be no wolfram coming out of them at all.

Mr. C. E. Low.—*Q.* Wolfram is being worked under entirely special conditions and things have been done both by Government and mine owners which will not be tolerated in ordinary times, simply because we want to get as much wolfram during the war as we can?—*A.* My suggestion is simply in order to increase the amount of wolfram which the Government requires during this war period, because the question of assisting mine owners in that way is a general question which we do not propose to deal with.

Hon'ble Sir R. N. Mookerjee.—*Q.* Did you represent the matter to the Local Government to have a mining school as a branch of the Engineering School at Insein? After all it is a reasonable and simple request.—*A.* So far as I am aware I think it is the first suggestion to Government.

Mr. C. E. Low.—*Q.* Are concessions taken up on the pegging out system?—*A.* How do you mean?

Q. The mining rules provide that in areas declared by the Local Government, instead of putting in a map you may peg out on the ground?—*A.* No. It is done in the usual way. A map ought to be supplied.

Q. In Tavoy district I understand that there was a great deal of delay on account of the difficulty of getting maps?—*A.* The trouble was that many concesionaires applied more or less for the same ground and surveyors were not available to map the ground, and there was also a great deal of delay in the Deputy Commissioner's office and there was considerable confusion and delay in starting work.

Q. Which is the basis of your application, map or a mark on the ground?—*A.* Map and description.

Q. And until you get a map your application does not take priority?—*A.* That I cannot tell you.

(*Mr. Holberton.*—My opinion is that notice is taken of your prior application.)

Q. A proper map is the starting point?—*A.* I think that is so. Practically the two are supposed to go in together.

Q. Have you had any difficulties about rights to water power?—*Mr. Wright.*—*A.* None. The Deputy Commissioner, so far as I am aware, has been fair and just.

Q. Do you get applications which involve competition for limited amount of water power?—*A.* So far as we are concerned, we have divided it up fairly and we have come to an equitable agreement and work under that agreement.

Q. You do not use water power for anything else except hydraulicing?—*A.* Nothing so far. There are some projects now using Pelton wheels for raising water.

Q. Do you think that anything is required beyond what is stated in the Mining Rules with regard to disputes about water power between individual concessionaires? You know that difficulties have arisen in South Africa, and blackmailing concessions have been taken up.—*A.* I understand that Government reserves the right to dispose of water rights.

Q. When these mining rules were drawn up it was recognised that there might be trouble in the future and it was thought desirable to reserve power to deal with it when it came along. At present the thing is not acute?—*A.* No.

Q. It is very likely to become acute after the war?—*A.* In time, possibly. But the question of water also involves the disposal of tailings, and that is already beginning to appear and it should be dealt with in some way.

Q. You mean dumping tailings outside a man's own area?—*A.* Yes. It has already come up.

Q. How do you make your flumes?—*A.* They are either iron flumes or wooden flumes. In one of our concessions we have made 6,000 feet of flumes of which 3,600 feet is iron and 2,400 is wooden.

Q. Is local timber suitable and available?—*A.* Quite, on some concessions.

Q. What do you think of the idea of pegging out, that is to say, making a mark on the ground and then getting it surveyed by a Government surveyor afterwards? Do you think that it is practicable in Tavoy?—*A.* It is a very jungly country and pegs are not irremoveable.

Q. If you lop a tree, for instance, it is difficult to remove that without leaving a mark?—*A.* I think so.

Q. It will last long enough for a Goverment surveyor to come along?—*A.* It is a question of priority of marks. There will be disputes between different people and you will have to decide them.

Q. It occurs in most countries of the world?—*A.* It does, but not such a conflicting number of people to deal with. You have Chinese, Japanese, Telugus and others. They would not respect one another's rights particularly if they wished to quarrel. It would not affect the larger areas taken up but the smaller areas.

Q. In most countries it is recognised that a man is expected to protect his own works to a certain extent?—*A.* Yes.

Q. Are you prepared to give any views about this suggestion of a mining and metallurgical school? It is rather a large order?—*A.* Speaking personally for myself I am not representing the views of the Chamber at all and I do not know what led them to make this suggestion, it would be better to have a central school in as much as you would have a larger number of people and you could afford to have a better staff and work under better conditions. You would put in so much time on theoretical work, and so much time on practical work might be put in Tavoy, or Bangalore or wherever people would go to.

Q. What sort of man do you think that such a school would try to produce, at any rate in the first instance?—*A.* It depends on the school. With a first class staff I do not know why you should not turn out first class men.

Q. You know what is being done in the coal fields by right classes and so on. They are practically training the sub-manager type of man, and there is already a scheme before the Government of Bihar and Orissa with the idea of having, in conjunction with Messrs. Tata's Steel Works at Sakchi, an institution there for the purpose of training men in metallurgy up to the type of sub-manager. Would there be any scope here for metallurgy?—*A.* Yes.

Q. Do you think there is a reasonable prospect of their taking up high speed steel manufacture here?—*A.* That is rather a financial question and I am not quite prepared to deal with it.

Q. If you say metallurgy what sort of metallurgy do you mean?—*A.* Chemists in connection with mines and small smelting industries in the province.

Sir D. J. Tata.—*Q.* Have you any iron ore here?—*A.* There is a little in the country.

Q. Have you any idea of the quality of the ore? What is the percentage?—*A.* From 40 to 50 per cent. I understand.

Mr. C. E. Low.—You say, "The Chamber wished to record their opinion that the present law for acquisition of land on behalf of industrial companies required revision especially in respect of the rights conferred and the limitation of the areas." Taking the question of mining, do you have any trouble about the acquisition of surface rights?—*A.* In Tavoy it is all Government forest.

Q. Have you any views on the subject of acquisition of surface rights?—*A.* I think that Government should certainly reserve the right if they have not got it to take up land for genuine industrial businesses including mining on the same terms as they do for the purposes of general utility.

Q. It was put to us by the Bombay Industrial Committee that the difficulty had always been hitherto in utilising these powers under the Land Acquisition Act for the companies and that there was no criterion as to when it was advisable to interfere on behalf of an industrial proposition, and their suggestion was that if an industry could not be started without this assistance and if the starting of such an industry was to the public advantage then it would be legitimate for Government to acquire the land?—*A.* That is quite reasonable.

Q. Turning to the acquisition of surface rights in mines, do you find any difficulty in other provinces where Government own the minerals?—*A.* I have not had any difficulty about access in any province in which I worked. The district officer has invariably sanctioned or given access. I have had no trouble with private owners.

Q. The Chamber says, "The practice of appointing non technical men as Inspectors of Mines was harmful to the industry and placed the Government in an undignified position."

In respect of mines, of course, you know that the man is appointed to administer the Mines Act for the safety of workers and so on. Are there any Inspectors of Mines in Burma who are non-technical men?—*A.* I do not know what was in the mind of the chamber. As a matter of fact, I do not quite understand the drift of that.

Q. Is it possibly the case that owing to the special war conditions and the difficulty of sending our regular mine inspecting staff to Tavoy some local arrangements have been made for temporary purposes?—*A.* I understand that Mr. Coggin Brown is the present inspector. He is a geologist, and not a mining engineer.

Q. He has had some training as a mining engineer, the same as the ordinary geologist gets?—*A.* Except the training that he had in the practical course I do not think he had any other training. This remark has no reference to Mr. Coggin Brown personally, who is everybody's friend.

Q. You say, "The chamber expressed the opinion that local difficulties had been noticed under the mining and prospecting rules referred to". What are the particular difficulties which you would like to be recorded about the rules?—*A.* I am sorry I do not know. Most of my time is spent out in the district and I do not spend much time in Tavoy.

Q. Have you anything to bring forward yourself about the Mining Rules?—*A.* No.

Sir F. H. Stewart.—*Q.* What about this question of experimental underground research? Is that not being done at all?—*Mr. Holberton.*—*A.* I am afraid I cannot answer that question at all. I do not know what the chamber means by it. I do not see how we are to expect Government to do our underground research for us.

Sir D. J. Tata.—*Q.* Does it not mean diamond mining?—*A.* Possibly; I do not know what they mean.

Q. They are driving at the fact that it is the duty of Government, rather than that of the firm?—*A.* I do not know. As a matter of fact, at the first meeting that was held by Sir Harcourt Butler when he started the wolfram campaign in November 1915, I myself was present and I asked him that very question. I said, "Supposing that our firm go into mining at your request and spend a good deal of money on this thing and get nothing, will Government give them any compensation", and he said they would. I do not think he committed himself at all definitely.

Sir F. H. Stewart.—*Q.* What is this chamber? How many members are there?—*Mr. Wright.*—*A.* Practically everybody is a member. The council has sent up this written statement without a general reference. I do not remember ever having seen this.

Q. Who is your Mining Adviser?—*A.* Mr. Coggin Brown, Mining Adviser and Inspector of Mines and Explosives.

Q. He is down there and he helps you?—*Mr. Holberton.*—*A.* Yes; he is extremely useful.

(*Mr. Holberton.*—"We cannot understand the reason of the five-square-mile limit when you have got practically an industry down there prepared to spend money to develop the thing, because you are placed in a difficulty in this way if you are limited to five miles. You, first of all, take up three miles and you find one of them is very good and perhaps another is feasible. You cannot apply an another three-mile area because you have only got the possibility of two more miles. Why is it desired to limit people who desire to get wolfram and have the money to spend on it, why is it desired to cut them down? You cannot tell exactly where your proposition is going to develop. You do not want to give up all the land except the particular portion or portions which you are actually working and so your leases cannot, as far as my opinion goes, be confined to the actual bits which you are exploiting at the moment in wolfram.")

Mr. Wright.—You would have to retain a certain area for water, a certain area for buildings, and a certain area for forests and these areas might be covered and you would have to exceed the limit of five miles. You would have to keep a certain amount of dead ground for the purposes of the mine.

Mr. C. E. Low.—*Q.* Do you think that five square miles would be sufficient if you excluded what I may call accommodation ground and you also gave an opportunity to the man to reduce his mining lease area once or twice during its currency?—*A.* To reduce the area down strictly to the mining portion of the area and exclude the rest of the area.

Q. Give him an accommodation lease outside his mineral areas?—*Mr. Holberton.*—*A.* I think nobody is going to exploit wolfram at one time over five square miles in the country, but they are bound to have a lot of extra property.

Q. What do you think of the question generally, which is rather an important one, of having your accommodation land outside your mineral lease area from the point of view of this maximum limit? Do you think it is a fair idea?—*Mr. Wright.*—*A.* Of course, it would meet the objection to Government giving a large area and the objection to people working a small area.

Q. Your objection arises, to a large extent, out of this question of accommodation land?—*A.* Quite so.

Q. A difficulty would arise in this way; supposing you wanted to mine in your

accommodation ground, that area would have to go over into the mineral area?—*A.* Yes.

Q. But there is also this difficulty. You may take up more accommodation ground simply to get it ultimately into the mineral area? How do you get over that?—*A.* I do not think there is any way of getting over that.

(*Mr. Holberton.*—We consider the limit rather unnecessary. We cannot quite understand the point in it when you have got responsible people really engaged in exploiting there and who have sunk their money there.)

Q. Has any representation been made giving the facts which you have now put forward, or sent up to the Local Government?—*A.* I think not.

Q. You say that five square miles is still small and you would be content with ten?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.* You said just now that no limit should be put to the area?—*A.* I should very much personally prefer that Government should limit people by judging of their capabilities. I do not see why a person who is capable of exploiting fifteen square miles of mineral country in Burma should not be allowed to do so.

Q. In that case, take the case of oil. You would be perfectly justified in giving the Standard Oil Company the whole area of Burma, assuming they are an eligible company? Does anyone wish to ask any further question?—*Mr. Wright.*—With your permission I should like to make a statement. I think the working of the rules depends so much on the Deputy Commissioners concerned that I am very strongly of opinion that the Deputy Commissioners should be made clearly to understand that the mining business is just as much a part of their work as any other part of their work. In many places—I do not say I have met with opposition, I have never met with opposition and I have the kindest feelings towards the district officers—there is a certain amount of indifference to mining which I think is quite unwarranted, and all district officers should be made clearly to understand that the mining welfare is just as much a part of their work as any other part of their work.

Mr. C. E. Low.—*Q.* Is that largely due to the fact that mining is a comparatively new thing?—*A.* Possibly; I could express my own feeling that some officers have met me halfway and others did not at all meet me.

Q. The letter of the rules is perhaps observed more strictly than is necessary?—*A.* It is not so much that. They carry out the letter of the rules and their spirit also once they understand that rules have got a spirit. The mining man is a nuisance to them.

Hon'ble Mr. H. Thompson.—*Q.* It has been suggested that the mining rules which provide for the grant of short-term prospecting licenses or thirty-years' mining leases are not altogether suited to mining conditions in Tavoy and Mergui where you have got deposits which will, in the ordinary course, be worked through in five or ten years?—*A.* Under the rules we are allowed to relinquish land by giving notice.

Q. It has been suggested that the elaborate terms of the lease, the detailed survey that is needed, and the elaborate conditions which are provided are not altogether suited to some of the concessions?—*A.* That is rather a side question really. It depends upon the position of the people who hold the ground and so forth. It also depends up on the question whether the ground is worth troubling about. Personally, I think that the title should be made as good as possible which involves a regular mining lease, a regular survey, and a regular everything.

Q. Of course, the difficulty is there, that prospecting licenses cannot be granted for more than three years in all, which may not be sufficient to complete working.—*A.* That is one of the points in the mining rules which might be left to the discretion of the district officer, with the consent of the Local Government.

Q. Is extension beyond three years impossible?—*Mr. C. E. Low.*—It is done in the case of oil companies.

Hon'ble Mr. H. Thompson.—At the end of three years it must be thrown open to the public. If the period is not sufficient the man may be allowed to take up the thing afresh under a new license, for one year in the first instance, which may be extended, but it must have been made in the meantime public property.—*A. Mr. Wright.*—My firm has an oilfield which it tried to open up in three years, but the three years was not sufficient. Three years is not enough certainly in the case of such areas. *Mr. Holberton.*—As regards rubber, so far as Tavoy is concerned, Mr. Thompson's idea is that it should be immediately planted, and I think his words are, "As soon as possible steps should be taken to get this land taken up". The consequence of that will be, I think, that the Chinese will dash in and get all the plots except those reserved by Government. The other companies at the present moment are pretty full up. We have got the wolfram business and we are not now prepared to take up this line, and my own personal view is that Mr. Thompson's policy on that point, as advocated in his note, is, at all events, disputable.

APPENDIX.

No. 271-B, K. S., dated Rangoon, the 25th January 1918.

From—R. W. BISHOP, Esq., Superintendent, Government Printing, Burma,

To—E. J. HOLBERTON, Esq., Manager, Bombay-Burmah Trading Corporation, Ltd.

With reference to your statement made before the Industrial Commission regarding a stock of Burma maps being kept at the Government Book Depôt for sale, I beg to say that a stock of the modern survey maps of Burma, on the scale of one inch=one mile, is available at the Government Book Depôt for sale to the public. A copy of the Book Depôt catalogue, corrected up to the 1st January 1918, showing the maps available, will be sent to you shortly.

Dated Rangoon, the 28th January 1918.

From—E. J. HOLBERTON, Esq., Manager, Bombay-Burmah Trading Corporation, Ltd.,

To—R. BAILLIE, Esq., Curator, Government Book Depôt.

With reference to your No. 271-B. K. S., of the 25th January, may I refer you to the official letter which you sent into our office on the 4th January this year in reply to our No. B-19 of the same date? You will see that you tell us therein that the maps we asked for are not obtainable in Rangoon and referred us to Calcutta who immediately fulfilled our requirements by return.

WITNESS No. 437. *Maung Shway Thwin.*

MAUNG SHWAY THWIN, *Advocate, Moulmein.*

WRITTEN EVIDENCE.

Qs. 1-5.—The source from which capital is principally drawn for industrial enterprises is from chetty money-lenders who are generally very reluctant to lend money except on good security and at a very high rate of interest—never lower than 12 per cent per annum. Any industrial enterprise is looked upon by these money-lenders as a very risky speculation. Unless either the co-operative societies or Government will render financial aid no industrial enterprise (unless started by large capitalists) is likely to flourish as banks do not lend money to assist industrial enterprises. I would suggest the following methods of Government financial aid to industrial enterprises, namely:— Capital.

(*a*) loans, with interest, like the agricultural loans;

(*b*) supply of machinery and plant on the hire-purchase system; and

(*c*) guaranteed or preferential purchase of products for limited periods.

There will then be no need for Government control or supervision, which will mean a large item of expenditure.

Q. 12.—Cottage industries, such as weaving, mat-making, and bamboo basket-making. The special objects of these societies should be to find a market for these articles. Co-operative Societies.

Q. 19.—Weaving, pottery, glass-ware, sugar manufacture, leather tanning, and making butter, cheese, jam, and jellies on a small scale so as to teach the people. Demonstration factories.

Q. 20.—Yes.

Qs. 25 and 26.—Yes; the object of the survey should be to find out what lands, which are now periodically subjected to inundation, can be reclaimed. Industrial Surveys.

Q. 28.—I think they are very useful. We should have one in Rangoon. Commercial Museums.

Q. 30 (*a*).—Not only travelling exhibitions, but exhibitions of industries would be of great advantage. In this respect, villagers should be encouraged (and not hindered, as at present) to expose for sale their own produce or articles of their own manufacture at any railway station free of charge. There should be a reserved carriage attached to the middle of every day-train for the accommodation of persons who carry their produce or articles of local manufacture for sale and no charge should be made for one load, *i.e.*, as much as a passenger can carry on his head or shoulders. In this way, people when travelling not only can do little buying and selling, but it will also serve as an advertisement. Exhibitions.

Q. 31.—My opinion is that these exhibitions are very useful.

Qs. 32-33.—Government should take measures to hold such exhibitions once a year at Rangoon and these should be held at about the time of the Tabaung festival. The admission fee to such exhibitions should be moderate, say, an anna. They should aim at bringing sellers and buyers together, but must be made popular. On the days of the exhibition all spare space might be utilized for the disposal of local produce and articles of local manufacture like the weekly bazaars held at several places in Upper Burma and the Shan States.

Q. 34.—Yes; their duties should be to collect samples of all articles manufactured in Burma and to find purchasers and to keep sellers and purchasers in touch and also to dispose of articles on commission sale. Trade representatives.

Q. 36.—Yes (*see* answer to Question No. 34).

Supply of raw materials.

Q. 40.—The definition of "forest produce" in the Burma Forest Act is, in my opinion, too wide and includes every conceivable thing to be found in the forests. There are certain forest products which, if left free to the villagers to collect, might be collected in large quantities, and could be disposed of on favourable terms. Government can impose a duty when such products are exported. The present system of selling the right to collect certain forest products is objectionable becauseit prevents many villagers from collecting, and the monopolist cannot do it effectually.

Land policy.

Q. 41.—Regarding the land policy of Government I strongly oppose the policy of having only small landholders and of keeping it in the hands of only agriculturists. This policy has never succeeded, and will never succeed. In course of time the lands go into the hands of capitalists. We must have capitalists, and also the labouring class. It is impossible, by any Government rules or regulations, to make labourers into capitalists. Labourers who are thrifty and industrious can, in course of time, become capitalists. The present policy of giving out only small plots of land, and only to *bona fide* cultivators, does not attract capitalists, and the want of capitalists prevents the introduction of modern implements.

If small plots of land were granted to *bona fide* cultivators then they should be allowed to dispose of it freely, instead of restricting them from disposing of it until after the expiration of a certain period from 5 to 10 years. Many of the *bona fide* cultivators cannot afford to wait until the land yields an outturn because they have no other means. Why should they not be allowed to dispose of the land at any time they like? One might like to dispose of the land after clearing, another after laying it out, and another after planting it out.

Q. 42.—On the principle that no revenue shall be assessed for ten or fifteen years.

Training of labour.

Q. 44.—(*a*) Yes.
(*b*) Nothing.

Q. 45.—By the establishment of industrial schools.

Official organisation.

Q. 56.—None.

Q. 57.—There should be a board of industries. The board should have executive powers, with budgeted funds.

Qs. 59-60.—The board should consist of seven business men, with a Director of Industries, who should be a technical specialist. The board of industries and the Director of Industries should be somewhat like those of the members and president of a municipality.

Q. 63.—None.

Technological departments.

Q. 71.—(*a*) There should be a technological institute for each province. They should be fitted into a general development scheme for the whole of India with a Central Research Institute.

Q. 72.—Each institute should be general in its activities and interests.

Q. 73.—There should be provincial Government control for each province.

Q. 77.—A method somewhat similar to the study of foreign languages, such as Chinese in other countries, might be adopted.

Q. 78.—We have no reference libraries.

Q. 79.—I think we should have one attached to the Bernard Free Library in Rangoon.

Q. 81.—(*a*) Municipalities might assist in holding agricultural and industrial exhibitions annually, giving prizes for good exhibits and by allowing exhibitors to dispose of them at the exhibition.

Q. 84.—I have never seen a copy of the "Indian Trade Journal".

Trade Journals.

Q. 85.—The Government should establish or assist industrial or trade journals for general industries.

Q. 86.—The best way of dissemination of information of this kind is to publish, in the form of leaflets, and give a copy, free of charge, to those who visit the annual provincial or local exhibitions.

Transport facilities.

Q. 97.—To a very great extent I would recommend the construction of cart roads, which can be ascertained from township officers and village headmen.

Q. 98.—Regarding railway freights I think special facilities should be given for transport, and reduced rates, charged on country produce of a perishable nature, such as fruits, vegetables, etc., for which a special carriage may be attached, with proper ventilation. The same remarks apply also to articles of local manufacture.

Q. 99.—Yes; extensions to Ye and Tavoy and to Myawaddi (Kawkareik township).

Q. 100.—There are plenty of waterways which (not to speak of either construction or extension), even if slightly improved, would not only afford facilities of transport, but would also have the effect of reclaiming large areas of land now subject to periodical inundation.

The assistance of the township officer and headman may be obtained in the following manner. We have periodical "pagoda" festivals in every township at which most of the villagers are present. The township officer should be made to attend every pagoda festival not only for the purpose of keeping order, but also for the collection of information regarding the wants of villagers for new road and waterways, and improvements of existing roads and waterways. The township officer should, on receipt of reliable information, inspect the different

sites for roads and waterways, and recommend such as he thinks fit to the Deputy Commissioner, who can then depute a Public Works Department officer to report. Upon receipt of a report and estimate the Deputy Commissioner can direct the township officer to make arrangements with the villagers to carry out small works, such as those which would not cost more than Rs. 500 at a price not exceeding the Public Works Department officer's estimate. A Public Works Department officer or township officer can inspect and report to the Deputy Commissioner whether the work is properly done ; I am sure that in such a case villagers will be willing to contribute as charity a certain portion of the cost.

Q. 102.—None ; I think further investigation should be made in this matter as we have many waterfalls.

Q. 103.—I think more facilities might be given for the granting of approval certificates. In fact, an approval certificate should be given to every applicant who pays a fee of Rs. 100 and a renewal fee of Rs. 25 every year. Prospecting licenses might be given on easier terms but for a shorter period, say, six months at a time, instead of one year, subject to renewal every six months on payment of surface rent. Licensees should be permitted to transfer their licenses, except to certain persons or class of persons specially prohibited by Government. In this manner villagers will be encouraged to search for minerals, especially when they know that they can dispose of the result of their labour to large capitalists or European firms. Mining and prospecting rules.

ORAL EVIDENCE, 24TH JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* You are an advocate in Moulmein ?—*A.* Yes.

Q. Have you any practical experience in industries ?—*A.* I have experience in industries ; I am the first person who started the citronella oil industry in Burma. I have got a rubber plantation also.

Q. Have you found any difficulty in raising capital ?—*A.* Yes.

Q. Have you found difficulty in respect of these two companies which you are interested in ?—*A.* Yes.

Q. How ?—*A.* We have to borrow from the chettis.

Q. What is the usual rate of interest when you borrow like that ?—*A.* One per cent, but generally more.

Q. One per cent per month ?—*A.* Yes ; one per cent per month on good security.

Q. What is your complaint about the present land policy ? Is it that all lands should be given to landlords, depriving the cultivators of their rights ?—*A.* Not that ; what I suggest is that there should be large landholders and small landholders also, and the policy of Government, I think, has been simply to encourage small landholders, and not large landholders.

Q. Do you mean that the present Government policy is to encourage small cultivators ? (Here the Hon'ble Mr. Thompson intervened and said :—" Under the ordinary waste land rules the area which the Collector or Deputy Commissionsr may grant is restricted ; the area may vary in different parts of the province ; but anything beyond that he must refer to higher authority ; in that way the rules restrict the grant of waste land to any one person at any one time ").

Hon'ble Sir R. N. Mookerjee.—*Q.* Is that what you mean ?—*A.* What I mean is that the Government policy is not to encourage large landowners, and lands are granted only to *bona fide* cultivators, limited to so many acres—10 acres or 25 acres.

Q. And that land cannot be transferred ?—*A.* Yes ; for instance, during the period of exemption, you cannot transfer it and, after the period of exemption, you must pay revenue first for five years, and then only can you transfer ; that is, there is restriction on transfer, at any rate for five years, and sometimes for many more years.

Q. But large landholders will do nothing to cultivate land ; they will again sub-let the land to smaller cultivators ?—*A.* Even if they sub-let to cultivators they get a certain earning from the lands. The cultivators are what are called the labouring classes and the landholders get a certain fixed earning from them ; in this way the cultivators themselves practically become the landholders.

Q. Would not the cultivators be better off if they take land direct from Government, instead of having to pay additional rent to the landlords ?—*A.* Well, they will be better off in one sense, that is, provided they can bring the land under cultivation but, in many cases, they are not able to bring the land under cultivation as it is expensive.

Q. How will the large landholders help them ?—*A.* We have not got a zemindar class here ; we have got some private landowners who let out lands to cultivators and make advances for putting them under cultivation ; without the help of the landowners most of the cultivators are helpless.

Q. There is a co-operative society here, is there not ?—*A.* Not on this side of Burma ; it has been started in Upper Burma ; they are trying to extend it to Lower Burma.

Q. Will that not meet this difficulty here ?—*A.* Yes ; to a certain extent.

Q. Then this paragraph in your note about land policy is not necessary ?—*A.* My contention is that there are some lands which require reclamation which is not within the

power of the ordinary cultivators ; these should be given to the landholder class ; for instance, by cutting a canal and so on, 100 or 200 acres might be reclaimed which the ordinary cultivators may not be able to do.

Q. Have you represented this matter to Government ?—*A.* Well, I made an application, and my brother made an application some years ago, for the grant of a large area to reclaim it, but we did not get any encouragement ; in fact, the thing was simply pigeon-holed, and we have not heard anything further ; and, not very long ago, I think about 5 years ago, I applied for the grant of about 120 acres for a citronella plantation ; the Deputy Commissioner said, " We are not going to give more than 25 acres " ; it was not worth while going in for 25 acres for a new industry, so I refused to take the grant of 25 acres ; it does not pay to get such a small area. Of course, I may say this ; later on, when another Deputy Commissioner came, it was given to a third party after I had given up my idea of not taking 25 acres.

Q. So it appears as if it depends not on the Government rule, but on the method of application of those rules by the Deputy Commissioner ?—*A.* I think, to a certain extent, it might be said.

Q. In answer to Questions Nos. 59-60 you say, " The board should consist of seven business men ..... ". What sort of business men will you get here ?—*A.* I should rather say they would be selected from among the merchants.

Q. From Europeans, or Indians, or Burmans ?—*A.* Not confined to one particular community, but from different communities.

Q. In answer to Question No. 98 you say, " Regarding railway freights I think special facilities should be given for transport, and reduced rates charged on country produce of a perishable nature, etc. ..... " Are there not special rates for fruits, vegetables, etc.?—*A.* I do not think so. They charge according to weight.

Q. But every railway has got special rates for fresh vegetables ?—*A.* So far as my experience goes, I do not think in this side of Burma, especially in the Pegu and Martaban lines, which I know, there is any special freight and I do not think there is any reduced rate charged. Of course, I do not know the rates in other places.

Q. Have you represented the matter to the railway authorities here ?—*A.* Not yet.

Q. You have not done that ?—*A.* No.

Sir D. J. Tata.—*Q.* They charge according to class ; fruit might be under a special class, carried cheap ?—*A.* What I suggest is that a special carriage, with proper ventilation, might be provided for the transit of these fruits, instead of mixing them with all sorts of goods in one truck.

Q. Is there enough of these fruits, etc., to justify a special carriage ?—*A.* I think there is a great deal of traffic.

Sir F. H. Stewart.—*Q.* In reply to the President you said that the chetties charge one per cent a month on good security ; what security do the chetties insist upon ?—*A.* The first security they want is jewellery, which is the best, and, secondly, houses, and so on.

Q. Land and buildings ?—*A.* Yes.

Q. Your answer to Question No. 103 about prospecting licenses ; don't you think that if the plan which you recommend were followed you would be creating a class of speculators in licenses ? —*A.* Speculators in this sense that people will go out and try to find someone who can work the mine, but, generally those persons who come across these mines first give information to someone who has got an approval certificate ; the man who gets an approval certificate can very seldom find minerals. It is these jungle people who actually find the minerals, but they won't arrange for approval certificates, and they come and ask the certificate holders how much they are willing to pay, and so on.

Q. Who is this township officer whom you refer to in answer to Question No. 100 ?—*A.* We have got a township officer for every township.

Q. Is he appointed by Government ?—*A.* Yes.

Q. Is he a permanent official ?—*A.* Yes ; they are permanent officials.

Q. Is he a Burman ?—*A.* Generally, Burmans. (Here the Hon'ble Mr. Thompson said that the township officer has charge of a small unit of administration, not of a district.)

Q. What is the headman ? Is he a similar sort of person ? Is he also appointed by Government ?—*A.* Yes. (Hon'ble Mr. Thompson :—" He is selected by the villagers ; he is not a Government officer ".)

Witness :—He is practically appointed by the Deputy Commissioner ; of course, the recommendation of the villagers, I think, influences the Deputy Commissioner to a certain extent.

Q. I do not quite understand your reply to Question No. 77 ; the question is, " What encouragement should be given to Government technical and scientific experts to study conditions and methods in other countries ", and you say " a method somewhat similar to the study of foreign languages, such as Chinese in other countries ..... " ?—*A.* What I mean is simply that rewards should be given to those who pass those examinations, say, Rs. 1,000 or Rs. 2,000.

Sir D. J. Tata.—*Q.* With regard to your answer to Question No. 1 about capital don't you borrow from any banks here when you want to raise capital ?—*A.* I do not know about

Rangoon banks, but we have got only one at Moulmein; so far as I know, they do not lend out, except on what is called easily realizable security, such as timber or paddy.

Q. What is the name of that bank?—*A.* Bank of Bengal, Moulmein. It does not lend out money on the mortgage of immovable property. We have only that bank in the Amherst district.

Q. Do I understand that the bank won't lend because you cannot furnish the security it requires, and the Chetties will only lend on the security of jewels and landed property?—*A.* They want landed property in towns; they do not particularly care for property in the district.

Q. Where do the Chetties raise money from?—*A.* They bring some money of their own and they also borrow from banks at a lower rate of interest.

Q. Have you any idea of the security which the Chetties offer when they borrow?—*A.* I do not think there is any security offered by the Chetties. In some cases, they pass on what they call the *taingzas*, which are Government warrants, for the timber which the timber traders hold; these are just like bills of lading or delivery orders; on the mortgage of the *taingzas* the banks lend to the Chetties and sometimes they take the signatures of two Chetties.

Q. Is it two or three?—*A.* As far as I understand, generally two: one man signs and another endorses.

Mr. A. Chatterton.—*Q.* Am I to understand from your remarks on land policy that you would like to see created a class of large cultivators?—*A.* What I suggest is that large cultivators, as well as small cultivators, should be created.

Q. Do you want land grants to be made to individuals on the understanding that they will cultivate the lands themselves?—*A.* No; he might sub-let, and also if he has got a large holding he might be able to import improved machinery to be used on the lands which he sub-lets. Although the policy of Government is to keep small holdings in the hands of cultivators what I urge is this:—that they do not succeed because those people who apply for, say, 10 or 15 acres, have not got means of their own to subsist for three or four years without looking to the land for earning, and, knowing that they cannot transfer it without sanction, they make some intermediate arrangement with some capitalist for borrowing and, after a certain time, the land eventually goes into the hands of the person who advanced the money. Thus, the man holds the land only nominally for a time, but for the eventual benefit of the capitalist. What I beg to suggest is this:—that land should be given freely to these cultivators, and they should be allowed to transfer freely. For instance, one man may like to take up a piece of land for 20 acres; after clearing it, and before he could plant it, if his means are exhausted, he should be allowed to transfer it to some other person who has got the means of improving it further; otherwise, after working a year or so, if Government want to resume it one year's labour is lost.

Q. You said you had a rubber estate; have you also got a citronella plantation?—*A.* It is a rubber plantation in which citronella is grown as a catch crop.

Q. Are you exporting citronella oil?—*A.* I have been exporting it to England for the past three years.

Q. What is the area of your rubber plantation?—*A.* The rubber plantation is about 5 or 6 years old. I have got about 200 acres under rubber and citronella.

Q. How much citronella oil do you produce?—*A.* I have exported about 200 drums during the past 8 months.

Q. How much does a drum hold?—*A.* About 36 to 40 lbs.

Q. How do you extract the oil?—*A.* By distillation.

Sir D. J. Tata.—*Q.* What is citronella oil?—*A.* (Witness handed over a phial of oil to Sir Dorabji, and said:—"It is used for medicinal purposes; it is a strong antiseptic in case of wounds and cuts."

Q. How much per pound of oil?—*A.* Before the war I got as much as 4*s.* 3*d.*, but since the war it has gone down to 2*s.* 8*d.*

Mr. A. Chatterton.—*Q.* What technical assistance did you get at the start?—*A.* It was my brother who tried it on a small scale; we sent samples to London; they found the oil satisfactory; so we extended the operations.

Q. Is your brother a chemistry graduate or trained in any of the chemical institutions?—*A.* No; he was not trained in any chemical institution. He has always been taking some interest in different industries and has been also studying books. He started his first experiment on a small scale, and when we found the quality of the oil satisfactory we extended our operations. This oil is far better than Ceylon oil.

Q. How do you market this oil?—*A.* I send it to my agents in London through Messrs. Thomas Cook & Son.

Q. And they dispose of it for you?—*A.* I ship to my agents direct to London. I got several enquiries also from America—from New York and Boston.

WITNESS No. 438.

MR. B. BANERJEE, M.Sc., *Chief Chemist, Rangoon Soap Works, Rangoon.*

WRITTEN EVIDENCE.

Surveys.

Q. 25. A complete survey of forest products and minerals of Burma should be made at an early date. The present reports should be supplemented by further surveys.

Industrial exhibitions.

Q. 31. Industrial exhibitions open the eyes of the people and give an impetus to industries. The manufacturers also get an impetus for the improvement of their products.

Q. 32. Government should hold and encourage such exhibitions. The exhibition held here last year was not encouraging at all. The poor manufacturers spent much on their expenses, but earned very little. Even sometimes their names were not correctly written in the published report. This was the case with Mr. V. M. Ganny. If matters go on in this way the exhibition, instead of encouraging industry, will rather discourage it.

The Government policy should be as follows :—

(1) The exhibition committee should consist of Government officials, traders, manufacturers, and scientists.

(2) The manufacturers should be requested to exhibit their manufactured products along with raw ingredients.

(3) They should be requested by the exhibition committee to submit a full report of their factories, stating additional capital necessary for the further development of their industries.

(4) The exhibition committee should grant certificates to those manufacturers whom the committee thinks are able to bring their business to a successful condition if they get sufficient capital.

(5) The exhibition fund should be utilized by helping the above certificate holders with money at a low rate of interest.

(6) Government should also help the manufacturers with loans at a low rate of interest.

(7) The committee should prepare a full report of the exhibits, with details of the products and addresses of the manufacturers, and Government should get it published through all the newspapers in different languages.

Reference libraries.

Q. 78. Here there is one Government library containing a few old scientific books. Industrial books are not available. I suggested buying some new industrial books, but to my surprise the answer was, "Government has not enough money to buy new books now". An up-to-date scientific library is essentially necessary for public use.

Q. 85. Industrial and trade journals of real value should be started and encouraged by Government.

Q. 86. Journals of the above kind should be published in different languages, as far as practicable.

General.

Q. 110. The industry in which I am actively interested is the manufacture of soaps in Burma. After studying the properties of available ingredients necessary for soap-making I began my experiment in the latter half of the year 1916 and, after a series of experiments for a year, have come to the conclusion that the manufacture of all kinds of soaps, is quite possible here.

The soap factory of Mr. V. M. Ganny, where I was making my experiments is the biggest factory in Burma. It is only for want of soap experts and sufficient capital that the factory has not yet been able to make any marked progress. For the same reason all the necessary apparatus has not yet been bought.

The series of experiments made by me for the recovery of glycerine from the wastelye of the Rangoon Soap Works seemed to be very costly. The better method to be adopted at present for the manufacture of glycerine in Burma is to separate it from the animal and vegetable fats first, using the fatty acids left for the manufacture of soap. The soap prepared from the stuff is very good in quality. The fats used in Burma are tallow, coconut oil, and cotton seed oil, of which the first contains about 10·8 per cent and the second 11·4 per cent of glycerine. The price of glycerine has risen from about Rs. 0-14-0 to Re. 5-8-0 per lb.

After separating glycerine from tallow the fatty acid left, when properly purified and decolorized, is also highly suitable for toilet soap-making. Another field for the fatty acid is that stearine, used in candle-making, can be prepared from it. The crude glycerine prepared from wastelye can be used for lubricating purposes while the pure glycerine has an extensive demand from medical firms.

There are about half a dozen soap factories here, and it seems that their progress is not satisfactory for the same reasons stated before.

The Government help necessary for the development of this industry is :—

(1) Helping the soapmakers by giving loan at a low rate of interest.

(2) An up-to-date laboratory should be established under the Government. Some active scientists should be appointed there. Provisions should be made for sending some of them to Europe to have training in factories there. Some of them should be sent to different parts of the province to investigate the presence of raw materials in the province. Demonstration lectures on soap along with other products should be delivered.

(3) Complete botanical and geological surveys of the Province are expected to help this industry by way of getting information about many raw ingredients necessary in soapmaking.

(4) The report of the surveys, rates of the materials and the way of communication should be published yearly for public information.

(5) The Provincial Government should encourage the manufacturers by buying the manufactured goods of the province for the Government use.

(6) Arrangements should be made to send a few B.Sc. and M.Sc. passed students (having special aptitude in the subject) to English factories for better training.

(7) The manufacturers should get their raw ingredients duty free.

(8) The Railway and steamer freights should be reduced and the manufacturers should be helped in the same way as Japan, Germany and the other Governments do.

New Industries for which Burma seems to be particularly suited.

III. (1) *Sugar Manufacture.*—Sugarcane is abundant in Burma. It is abundantly cultivated in Pyinmana and some other parts of Burma for jaggery manufacture. Most of the ingredients for purification are available here. The only necessity is now for up-to-date scientific machineries. This industry should be immediately taken up by the Government and as soon as it comes to a successful state it should be developed to double its extent, by selling shares to the public. Help by way of advice should be given to those interested in the manufacture. The *begass* should be utilised as manure and its pulp should be tried for papermaking along with other ingredients while its ash containing about 20 per cent. of potash carbonate should be utilised by the soapmakers for soft soap manufacture.

(2) *Starch.*—Can be manufactured at a very cheap rate as rice is very cheap here. The principle of manufacture is simple and very costly machineries are not wanted. As regards its manufacture the rice is first cleansed by powerful fans and covered with warm water of 140° F. to which sulphur dioxide is frequently added making a solution of 1 degree Baume. After about 12 hours the water is run off and the softened rice is perfectly washed, crushed, washed several times and dried.

(3) *Straw Board.*—Straw is abundant here. For preparation of boards the straw should be boiled with a small percentage of caustic soda. The waste board and waste paper should be utilised in the straw board manufacture. It has a big demand in Burma.

(4) *China clay.*—Different samples of china clay obtained from Pyabwe, Thaton, and other places prove that a procelain factory can be started here. At the start electric insulators, dolls, toys, jars, galipots, filters, etc., should be made. Samples examined by me are highly suitable for above purposes but for high class pottery better stuff of Kaolin should be searched for in Burma.

(5) *Rosin and Turpentine oil.*—Rosin is one of the most important ingredients necessary in soapmaking. It is left as a bye-product after distilling resin—gum of pine—and condensing the turpentine oil. Rosin can be obtained in good quantity in Burma. The price of English rosin has risen from Rs. 30 to Rs. 100 per 100 viss or 360 lbs. The method of manufacture is simple.

(6) *Manufacture of Common salt.*—Common salt is one of the most important thing in every-day life but unfortunately we are to depend mostly on Liverpool. Will the Provincial Government be kind enough to encourage the local salt manufacture (from sea-water) in every possible way ? Its manufacture in big quantities will enable us to prepare Hydrochloric Acid, Sodium Sulphate, Soda Ash and Caustic Soda at very cheap rates.

Usefulness of the refuse of some factories here.

(7) (*a*) *Refuse of Aerated Water Factories here.*—The biggest aerated water factory here is of Hon'ble Mr. Du Bern. Carbon Dioxide necessary for this water is prepared here by treating soda carbonate with sulphuric acid. After getting the gas the refuse liquid is drained off, thus losing an important chemical necessary in good quantity for medicinal purpose. In the above-named factory about 3—4 cwts. of soda are used every day. I procured a few lbs. of liquid and prepared samples of soda sulphate which is highly acceptable in the Rangoon market. The method of preparation is simple :—The liquid was neutralised by treating it with Burma chalk, filtered and concentrated. The colourless crystals of soda sulphate were thus deposited. The crystals were then dried and kept in bottle.

(8) *Manufacture of oxalic acid.*—Possibility in Burma. It was formerly prepared from sugar and molasses by treating them with nitric acid but now-a-days it is prepared from sawdust by treating with a small quantity of a mixture of caustic soda and caustic potash. The sawdust is made into a paste with a concentrated solution of a mixture of potash 2 parts and soda 3 parts and heated in iron pans at 240° C. Afterwards the mass

is treated with water, the solution of potassium and sodium oxalates thus obtained should be boiled with lime, the insoluble calcium oxalate is thoroughly washed with water and treating with dilute sulphuric acid we get oxalic acid solution which is then evaporated to crystallisation.

In Burma an abundant quantity of sawdust is obtainable. The cane *begass* should also be experimented for the preparation of oxalic acid.

(9) *Distillation of Oils.*—Possibility in Burma. I studied the distillation of essential oils on an industrial scale while I was sent to British Baluchistan in 1913 for this purpose From my own experience I have come to the conclusion that the following cheap raw ingredients will be much useful in distillation work in Burma:—

(*a*) Rinds, seeds and leaves of lemon and of citron much available here for lemon and citronella oil.

(*b*) *Lemon Grass.*—Abundant in Burma. The distillation is being carried on in Moulmein. The work should be developed on big scale (lemon grass oil).

(*c*) Peppermint in Upper Burma.

(*d*) Rinds, seeds, and leaves of orange abundant here—(Orange Oil).

(*e*) Camphor from Northern Shan States—suitable communication necessary. The camphor distilled by the Shans in crude way is not perfectly white or colourless. When it is redistilled it gives good camphor.

At present Japan is the first place as regards camphor production but in the near future Burma is expected to stand at least the second if the Government is ready for industrial development.

(*f*) *Wood distillation.*—Pine wood available in Burma—giving turpentine oil, wood tar, etc.

Hard wood—abundantly available in Burma giving acetic acid, wood tar, charcoal, etc.

(10) Slate pencil can be prepared from Burma kaolin.

(11) Gypsum is abundantly available here and plaster of Paris can be prepared at a cheap rate.

In conclusion I beg to suggest that our Government should establish new factories for the manufacture of materials which are not prepared here at present and help sufficiently for the development of the already established factories. A demonstration factory will also be useful to the public.

(*Witness did not give oral evidence.*)

Mr. J. Coggin Brown.

WITNESS No. 439.

MR. J. COGGIN BROWN, M.Sc., F.G.S., M.INST., M.M., M.I.M.E., *Geological Survey of India, Calcutta.*

WRITTEN EVIDENCE.

(*Witness submitted a confidential written statement. He did not give oral evidence.*)

Mr. T. O. Foster.

WITNESS No. 440.

MR. T. O. FOSTER, F.R.I.B.A., *Government Architect, Burma.*

WRITTEN EVIDENCE.

Pioneer Factories.

Q. 8.—In one way by bringing before the public particulars of the needs of Burma and how these needs are now being met and the possibilities of Burma supplying them herself if she does not at present do so.

Industrial Surveys.

Qs. 25, 26 & 27.—I am not aware that full particulars have ever been obtained as to (1) Building Stone—Brick earths, limes and cements, at least if they have, then a means should be found of making such information public.

Q. 28.—A Commercial Museum in Rangoon would be invaluable.

Commercial Museums.

Q. 29.—I think for Burma one in Rangoon should be sufficient for the present, it should be placed conveniently near a business area and should be made a place of interest to all, whether in search of special information or not. In fact the Museum should be built with a view of encouraging people to visit same, in other words should be a "live Museum."

Q. 30.—I see no reason why the Museum should not be used by people as a means of advertisement of their wares; this would particularly apply to the village industries, people away in the beyond who have an art or craft which otherwise would never come before the public.

Exhibitions.

Q. 31.—Should be held as often as people can be attracted to same.

Q. 32.—Yes, should offer prizes for workmanship, etc.

Q. 33.—They should be both popular in character and also a means of bringing buyer and seller together.

Q. 35.—Yes.

Q. 37.—Yes.

Q. 45.—The building trades are sorely in need of being taught. Workmanship is accordingly at a low level here. Master workmen should be brought from Home as instructors and also with a view of inspiring pride in the various trades. Training of labour.

Q. 49.—I am not in favour of night schools out here—day schools are wanted. The Engineering School at Insein could be developed to meet any ideas on the subject. Generally I am of the opinion that Government should take steps to see if Burma can be self-producing in Building materials—Cements and limes are imported here at high costs at present. General.

An expert in Brick clays is also wanted. I am under the impression that Burma could produce first class bricks if such an expert were made use of—also tiles, fire-clays and earthenware.

(*Witness did not give oral evidence.*)

WITNESS No. 441. *Mr. B. Raikes.*

MR. B. RAIKES, *Electrical Inspector, Public Works Department, Burma.*

WRITTEN EVIDENCE.

Training of Labour and Supervision.

It is essential that primary education should be on a sound foundation in every country seeking industrial development. Without such education, the link between the organiser or master together with his assistants and the workmen is missing, and the knowledge which the leaders possess is consequently reduced in value. Necessity for primary education.

In certain classes of industries in India chiefly those in which mechanical or electrical appliances are used, excellent workmen are to be found, but in far too many cases these men, if taken away from their regular routine and put to new work (for which no greater skill is really required) will be found wanting, because they failed, through lack of simple knowledge of the three R's, to thoroughly understand their teachers. In other words the ground must be prepared generally.

Comparatively little has been done as far as I am aware to effect real improvement in the Indian labourers' skill and efficiency; the improvement, if any, has been chiefly brought about by themselves aided by scraps of information picked up from Europeans or Americans sent out specially for some work.

It is, I believe, true that the majority of trades must at the present time look to Europe or America for the really skilful and efficient workmen, that is to say, men who are able not only to continue in the way they were taught but who are also able to think out new lines for themselves. Necessity, due chiefly to competition, and so called education appear to be the leading factors in this, and until education in India is organised in such a manner that the working classes may utilize it to assist them in their work, Indian artisans as a whole, in spite of all necessity, cannot hope to compete with others who are in close touch with technical books, papers, night schools and instructors.

Education coupled with instruction by master tradesmen from Home would no doubt lead to an improvement, but the question of language presents some difficulty. Men brought out from Home would not be in a position to instruct immediately on their arrival in this country except through an interpreter. Further they would use technical terms which no interpreter could interpret; the difficulty of getting men together for instruction has also to be met, and the cost of schemes considered.

The question of the purely primary schools I must leave to others, as it is beyond the scope of these replies except in so far as that they (the schools) appear to be essential for the following scheme which might prove worth considering.

The scheme above referred to is the establishment of central instructional depôts throughout India and Burma to which skilled artisans from Home could be appointed as instructors for short periods only, say, three years. Industrial demonstrations.

The class of instructor selected would of course be varied to suit the requirements of the province or district but in nearly every case mechanical engineers, bricklayers or masons, and smiths would be required. These instructors should hold practical demonstration classes on works when possible but always with proper appliances to an audience composed of—

(1) Junior Foremen or leading hands in the employment of firms and Government Departments, who have a sufficient knowledge of English to ensure that they will thoroughly understand their instructor.

These men should remain in the pay of the firms or Departments to which they belong during a term, say, of three months, and should be required to pass an examination at the end of that term.

As it is to them that the country would have to look for the real improvement in skill and efficiency of the workmen they would afterwards be required to teach, a certificate or diploma carrying with it some standing should be granted them, say, after having done two terms or six months at the depôt, passed the required examinations and been favourably reported on by the firm or Department employing them not earlier than six months after the instructional courses have been completed. Such certificate to be endorsed if further periods of instruction, etc., are gone through with credit or cancelled in the case of misdemeanour by the holder.

(2) Any person on payment of a fee.

(3) The students of an engineering or technical college.

In the first instance these instructional depôts would probably be attached to Engineering Colleges where facilities to a certain extent already exist for demonstrating, but later on they may take a different form and classes might more readily be held on works or in factories ; but, in any case it would, I think, be necessary to ensure that nothing but useful matter was taught and that the teaching of the original masters reached the right quarter, that is to say, the workmen of the country.

In order to attain this end the demonstrators might be encouraged to make inspections of the works, etc., where their pupils are engaged and in this way they would come in close touch with the requirements of the country and at the same time they would be able to see for themselves whether their instructions were being properly carried out.

It is somewhat difficult to estimate the cost of such a proposal as I do not know what facilities already exist in India for the establishment of central depôts but, I should think, that a sum of Rs. 1,00,000 per annum per establishment would cover the entire cost including interest and depreciation charges also passages for the instructors.

Training of Managers and Supervisors.

With regard to the training of managers and those in charge of commercial undertakings, the qualifications of such men are, I think, recognised to be—

(1) General business capacity, including a knowledge of Home and foreign markets.

(2) Knowledge of the capabilities of the artisan and machinery under their control.

(3) A thorough knowledge of the wants of the people to whom they are about to supply articles.

As far as my knowledge of the country goes at least two types of men are required. In both types it would be necessary to ensure good general education coupled with the ground work of commercial education : this is doubtless being already arranged in connection with the schools and colleges of India, and again in both types it would be a distinct advantage if the men after leaving college, etc., could serve for a short time, say two years, in business-houses here in order that they may form some idea of their own as to the conditions and requirements of the country.

After that comes the splitting of the ways into men for businesses intending to compete in the markets of the world and men for purely local industries. It is the former of these types that the country would require for the development of new industries and the latter for continuance of the local work and its organisation.

With regard to the first type of men it is clear that little or nothing can be learnt by them in this country about industries which as yet do not exist here unless of course at considerable expense to themselves. It is also, I think, clear that many Burmans, Indians and Eurasians, though thoroughly capable men would never be able, through lack of funds, to obtain training in any special industry until that industry came within easy reach. There seems, therefore, to be only one way open should Government desire to provide capable managers, etc., from the inhabitants of this country and that is for Government to take the training of men in hand and place them in such positions that during their training they are in close touch with large industrial centres.

This is again a costly scheme and a difficult one to estimate, but £250 per annum per man should more than cover all expenses with tuition, board and residence.

With regard to the selection of men for this special class of training, I have already stated that it might be an advantage to select men that have already had some experience of business in this country. Now it is probable that as many of the new industries will be started by firms already well established in this country little trouble would be experienced in getting the right men as the firms would see to that, and financial aid would doubtless be forthcoming in these cases, but others would have to be provided and, perhaps, the students of technical or commercial schools would make the best reserve either immediately upon leaving the college or after a period has elapsed. Competitive examination would be necessary here, and also a selection by the student as to what line he wishes to take up.

The second type of men although of great importance to the local industries does not need the same training and would probably learn their business better in this country assisted by technical and commercial schools.

Control of technical education.

It seems preferable that technical education for the special purpose of industrial development should be under a Department of Industries rather than under the Educational Department.

As far as my experience goes the Educational Department is not in close enough touch with the requirements of the country to guide or control such education.

General.

Very little information has been accumulated regarding the possibilities of hydro-electric power in Burma. What little information exists is due chiefly to private firms. Some 10 or 11 years ago, the Government of India suggested that investigations should be made but the cost of efficient surveys proved, I believe, to be too heavy and the matter was dropped. Hydro-electric power.

Although accurate surveys of the country, as a whole, are still practically impossible some useful information might be obtained annually at Government expense, if an indication could be obtained as to the area in which such power would be of real service in the near future.

This might be done for a start by advertising the fact in the papers, etc., that certain rough surveys will be made of any area which any person or firm would indicate as containing a probable source of power for any industry they may be interested in, Government, of course, reserving the right of making preliminary investigations to ascertain whether it is worth while making a rough survey. It seems probable that in this way one small survey party, with the indirect assistance of the Executive Engineer of the Division concerned, might place some valuable information at the disposal of Government or industrial companies.

Up to the present, in Burma, the Indian Electricity Act does not seem to have had much effect on the province's industrial development, as the uses of electrical energy are not sufficiently known. I do not think that the Act itself stands in the way but the administration of it requires care in order to prevent its terms becoming too severe on petty schemes likely to demonstrate the value of electrical energy for industrial purposes. Indian Electricity Act.

Local encouragement, and, to a certain extent, advice by Government Officers would doubtless assist in development, and in overcoming any fears of contravening the terms of the Act which intending users may have.

(*Witness did not give oral evidence.*)

WITNESS No. 442. *Mr. R. W. Bisho*

MR. R. W. BISHOP, *Superintendent, Government Printing, Burma.*

WRITTEN EVIDENCE.

V.—Training of Labour and Supervision and VII.—Organisation of Technical and Scientific Departments of Government, with special reference to the printing industry.

My experience has been confined to the printing industry. In this industry a great deal has been done to improve the labourers' efficiency and skill by practical and technical instruction in the course of their daily work (44*b*). Their efficiency and skill could be still further improved by a regular system of instruction in technical schools. I am of opinion that the standard of skilled labour in India is on the whole very inferior, especially in detail, and that if it is to be developed so as to place it in a position to compete with the skilled labour of other countries in its own markets it must have encouragement and opportunity for instruction. I think, therefore, that some scheme of instruction in technical schools for the leading industries should be instituted in the industrial centres (45). I have experience of the training of apprentices in the printing industry, both at Home and in India. The apprenticeship system in force in the Burma Government Press provides for the training of suitable boys practically at Government expense (46). Training of labou

The particular advantage following the establishment of technical schools is that apprentices who have attended these schools become better qualified workmen owing to the initiative and confidence that proper training inspires, and consequently are of greater value to their employers. It rarely happens that apprentices have the opportunity of learning every branch of their business in the workshop, and by attending technical schools they can supplement the training received in the workshop and thus acquire a wider knowledge of their business (47). I think therefore that the training of apprentices in the workshops should be supplemented by a course of instruction in technical schools, which should be encouraged by Government and private employers, and every facility should be given to apprentices to attend them (48). Technical schools should be under the control of a Department of Industries in each Province with an organising expert as Head of the Department. It should be distinct from the Department of Education and there should be no question of dual control (50). It should be a compulsory part of the training of supervisors and skilled managers that they attend and qualify at technical schools. They should not be regarded as qualified to give instruction unless they possess certificates for the various subjects and branches of their profession (51). Technical schools.

Study abroad.

Every encouragement should be given to Government and private technical experts to study conditions and methods in other countries. This could be done during periods of leave, and travelling and other expenses should be allowed to those who are willing to spend a portion of their leave on their employer's business. The policy of Government in the past, so far as its technical experts are concerned, has been a very narrow-minded one in this respect (52 and 77). The Government Printing Department in Burma is capable of giving assistance and does render assistance from time to time to private firms engaged in the printing industry. The assistance given is generally in the shape of loans of type and material used in printing (63).

Assistance in marketing products.

As regards assistance in marketing products I see no objection to the publishing of lists of imported articles, which, in my opinion, would be more advantageous than exhibiting them in commercial museums (37).

Reference libraries.

No serious difficulties have been experienced by me in consulting technical works of reference, as there has been a fairly well-equipped technical library in existence in the Burma Government Press for some years past (78 and 79).

(*Witness did not give oral evidence.*)

Major T. F. Owens.

WITNESS No. 443.

MAJOR T. F. OWENS, I.M.S., *Chemical Examiner to the Government of Burma.*

WRITTEN EVIDENCE.

VII.—Organisation of Technical and Scientific Departments of Government.

The Chemical Examiner's Laboratory.

The Chemical Examiner's Department gives assistance to industries to a limited extent. The Department is primarily intended for carrying out Medico-legal and general analytical work required by Government. The Chemical Examiner is allowed to execute tests for firms and private individuals as long as such work does not interfere with his legitimate duties. The assistance that this Laboratory gives to Industries is limited to simple analytical work. We have neither the equipment nor the time to devote to research work. I am not sufficiently familiar with industrial concerns to form any opinion as to whether a Technical and Scientific Department is required. As regards my own work, there does not seem to be much demand for research in Industrial Chemistry. During the eight years that I have been a Chemical Examiner, I have been asked on four occasions only to undertake such work. Concerns in which chemical processes are of great importance such as the oil industry, will always employ their own experts.

(*Witness did not give oral evidence.*)

Mr. H. E. W. Martindell.

WITNESS No. 444.

MR. H. E. W. MARTINDELL, *Joint Secretary to the Government of Burma, Public Works Department.*

WRITTEN EVIDENCE.

I spent the early years of my service in the Public Works Department in doing pioneer engineering in the Northern and Southern Shan States and Kachin hills and the later years on irrigation works in the dry zone. Till I became Chief Engineer I knew nothing of Lower Burma and very little of Rangoon, its chief port. I have been pressed to reply to the 113 questions forwarded and therefore endeavour to comply.

II.—Technical aid to Industries.

Publication of results of researches by Government experts with private firms.

18. The advantages of unrestricted publication are well known in the Medical profession. The advantages in Commerce and Industry have become so apparent in England during the present war that the fetish of secrecy is already dead and co-operative action holds the field.

Research abroad.

22. I think it must be obvious that provision for research on special subjects in the better equipped laboratories of the United Kingdom would be advantageous to India.

Industrial Surveys.

25. The present poor progress in the province indicates the necessity for further surveys. I fancy I was not singular in being struck by the great prospects of Burmese timber and forest produce as exhibited in the Forest section of the last Arts and Crafts Exhibition.

26. A matter for experts to decide.

27(*a*). I know of no Consulting Engineers in India beyond the Inspector-General of Irrigation.

III.—Assistance in marketing products.

Q 36.—Yes.

Q. 37.—Yes.

Banking facilities.

Q. 39.—We might with advantage study the German system of Trade Banks and apply what is suitable to Indian conditions. The English system is out of date.

V.—Training of labour and supervision.

The lack of primary education decidedly handicaps industrial development, that is, the alumni of the Insein Engineering School suffer in efficiency owing to the fact that they are admitted without a sufficiently good primary education. Much has to be taught them at the school that they should know before they enter and they are unable to assimilate much of what they are taught. After leaving the school they suffer as they find it difficult to follow the instructions of those over them who have neither the patience of trained teachers nor the same personal interest or time to make them understand. I have had no experience in training apprentices, but I have myself had years of training in workshops both in India and England and gained invaluable experience from that training. Lack of primary education.

Industrial Schools should be under a Board of Industries and not under the Department of Education. The latter Department has little knowledge and consequently little sympathy with such training and should not control the Industrial Education of the country. The standard of examination for Mechanical Engineers should be the same throughout India and the certificate of one province should be recognised by all the others. Control of Industrial Schools. Mechanical Engineers.

VI.—General official administration and organisation.

The institution of a Board of Industries with a Director at its head with executive powers and budgetted funds for each Province under the Government of India would tend to general improvement as it would then be someone's business to attend to the progress of industries. Official organisation.

VII.—Organisation of Technical and Scientific Departments of Government.

The only institution I know of is the Government Engineering School, Insein. This school has been designed on too small a scale, it is understaffed and ill-equipped. I recommend its reorganisation on, say, the lines of the Madras one.

Provincial Technological Institutes should be formed and co-ordinated by a scheme for the whole of India with a Director General of Industries in charge. In the present state of India, Government control would be necessary. Every assistance should be given to such Government experts to study the conditions and methods of other countries. Study leave should be granted as is done for the Indian Medical Service. Technological Institutes.

IX.—Other forms of Government Action and Organisation.

97. The most outstanding want of the province is the improvement to its communications. I consider the main line of improvement called for with our limited funds is the construction of systems of light railways. If the land be acquired and the formation be designed so that as soon as each light railway proves a success and its carrying capacity is reached or exceeded it can be converted by change of rails to the metre gauge and be absorbed into the general Railway System, no loss of money will ensue as the permanent-way and rolling stock and bridges can be used again elsewhere. Transport facilities.

In my opinion the lack of suitable cheap road metal makes the original cost and maintenance of systems of metalled roads so formidable a proposition that light railways even if they do not actually pay will still prove a cheaper proposition for the finances of Burma and be greatly more efficient in distributing the produce of the country. If a light railway scheme is considered on a suitable scale without waiting for private enterprise, it will be found that the people who use and benefit by them will pay for their maintenance while the whole charge in the case of roads has to be borne by the general tax-payer.

The waterways in Lower Burma should be developed to their full limits. Individual views as to their desirability should be brushed aside. There are already printed reports on many schemes and I need add no more.

102. Practically nothing has so far been done to develop the hydro-electric power available. Full investigation is desirable. Hydro-electric power surveys.

(*Witness did not give oral evidence.*)

WITNESS NO. 445. *Mr. S. A. Smyth.*

MR. S. A. SMYTH, B.A., I.C.S., *Deputy Commissioner on special duty, Burma.*

WRITTEN EVIDENCE.

Experience.—I have served on the Burma Commission for 16 years of which 3 years were spent in the Secretariat and 3½ years on Settlement. In 1909 I officiated as Director of Agriculture for 3 months and in 1914-15 spent nearly 4 months on special duty in connection with an industrial survey of the province. Of these 4 months, a month and a half were spent on gaining an insight into co-operative methods and the remaining 2½ months on enquiry on the spot into the circumstances of various indigenous industries in Upper Burma. As I was required for other work early in 1915, the knowledge which I gained regarding industries in Burma is necessarily very partial and incomplete, and is scarcely sufficient as a

basis for general conclusions. It is therefore not possible for me to reply in detail to the questions; and perhaps some information regarding a few typical industries is the best form which my evidence can take.

Foreign industries.

Industries in Burma may be divided into two classes, Indigenous and Foreign. The foreign industries consist usually of large enterprises such as the extraction of petroleum in Yenangyaung, etc., wolfram mining at Tavoy, rice milling in Rangoon and other large centres, extraction of timber by European firms, etc. Most of them are financed by European capital and run on European lines, generally with European assistance. Of late years, however, a number of enterprises, such as rice and saw mills in the smaller towns, cotton ginning mills in the Myingyan and Meiktila districts, etc., have been undertaken by Indians and Burmans, generally on Indian capital; and there is a tendency for such enterprises to increase in number. There are also a number of smaller foreign industries, such as the manufacture of mineral waters, carried on in towns; usually by Indians and other immigrants. Burmans, however, take a large part in some, *e.g.*, the manufacture of European furniture.

Indigenous industries.

Indigenous industries are usually financed by local capital or by Indian capital obtained from the local *chetty*. Foreign methods of working have made little or no impression on them; but in many of them imported materials are largely used. Practically no organisation has been introduced into the method of supply of these materials, which are generally obtained from local shop-keepers; nor has practically anything been done in the way of organising the distribution of the finished products. A few of the industries are centralised at localities where conditions are specially favourable. To this category belong the manufacture of Pegu jars in the Shwebo district, lacquer work at Pagan, Kyaukka, etc., and mat making near Alon. Other industries are centralised for historical reasons. Thus the silk weaving at Amarapura and Sagaing owes its origin to Manipuris who were taken captive during the Burmese régime and settled at these places. But the majority of the industries exist more or less all over the country; and the extent to which they are distributed is to a large extent governed by the capacity of the land to maintain the population on it. In districts where crops are abundant and comparatively certain, industries are, as a rule, confined to the large towns; whereas in districts like those falling within the dry zone of Upper Burma where agriculture gives a scanty and uncertain income, industries are scattered throughout villages. The majority of the indigenous industries are not whole-time employments but are subsidiary to agriculture; and the amount of industrial work done in any year tends to vary with the crops. There are, however, a number of whole-time village industries on which those who engage in them are entirely dependent.

Pottery.

To this last category belongs the pottery industry at the three villages of Nwenyein, Shwegun and Shwedaik on the right bank of the Irrawaddy near Kyaukmyaung in the Shwebo district. Here the large jars known as Pegu jars and used for storing oil, grain, etc., all over Burma, are manufactured. The existence of the industry is due to the fact that clay suitable for making very large jars is found in the low hills close to the villages. The largest sized jar will hold 150 viss of oil and cannot, apparently, be made in any other part of Burma. The materials required in making jars are earth obtained from the hills close to the villages, lead glaze from the Shan States and firewood obtained both from the local jungle and from the drift wood which comes down the Irrawaddy during the rains. The plant consists of a bamboo and thatch shed in which the jars are made and partially dried; potters' wheels made of teak wood; and a furnace built of brick in which the jars are burnt. The shed costs Rs. 150 to construct and the furnace Rs. 300. About seven potters' wheels costing, when new, Rs. 5 each, are required for each shed. The other implements, consisting of shovels, pounders for the glaze, implements for scraping and ornamenting the jars, etc., are of local manufacture and small cost. Practically all the inhabitants of the three villages are engaged in the industry. The principals, who are called *Sayindaings* and number about 50, own the sheds, furnaces and other plant, purchase the earth, glaze and firewood and employ the potters and their apprentices and all the other labour required for the production of jars. Practically all the *Sayindaings* work on capital borrowed from local lenders at four per cent. per mensem interest. The *Sayindaing* who has no capital of his own has to borrow about Rs. 500 during the first three months of the year for repairs to plant, purchase of materials and advances to his employees and the collectors of drift wood. This carries him on only until the first two furnaces of pots have been burnt and disposed of in September. From the proceeds of these two furnaces he is able to go on until the end of the season. The jar making season lasts from June until February. In the hot months the jars dry too rapidly and crack. Most of the distribution of the jars is done by middle-men from Magwe, 360 miles down the Irrawaddy. These middle-men come up to the potteries from August on, buy the jars from the *Sayindaings* and raft them down the river. The earnings of the *Sayindaings* are substantial as, the following account of the cost and selling price of a furnace of jars will show:—

Cost—

	Rs.	A.	P.
Earth	3	8	0
Glaze	18	0	0
Firewood	44	0	0
Hire of potters	40	0	0
Hire of other labour	21	8	0
Total	127	0	0

Proceeds—

		Rs.	A.	P.
80	150-viss jars . . .	240	0	0
12	100-viss „ . . .	18	0	0
12	50-viss „ . . .	7	0	0
12	25-viss „ . . .	5	0	0
Smaller jars		5	0	0
	Total .	275	0	0

Allowing for breakages, there is a profit of about Rs. 130 per furnace. About six furnaces can be burnt in each year, giving a total profit of Rs. 780, from which has to be subtracted about Rs. 40 for repairs to plant, leaving a nett profit of Rs. 740. But as the *Sayindaing* has to pay interest on Rs. 500, borrowed capital, for 8 months at four per cent. per month, his profits are reduced by Rs. 160 to Rs. 580 a year. As a matter of fact, he makes less than this because he is generally burdened by old debts. Master potters make Rs. 25 per furnace of jars and apprentices earn Rs. 15 per furnace. The remainder of the labour hired by the *Sayindaing* is paid for at cooly rates. The middle-man from Magwe makes large profits. A raft consists of 350 large jars costing Rs. 1,050 at the potteries. The cost of constructing the raft and of the hire of the raftsmen to Magwe is about Rs. 150; so that the total cost of the raft of jars at Magwe is Rs. 1,200. If sold there, an average price of Rs. 4 per jar can be obtained; so that the profit is Rs. 200 a raft. Much larger profits can be obtained by taking the raft to Lower Burma, where the jars sell at Rs. 4-8 to Rs. 5.

This industry can be assisted only through the *Sayindaings*, who are the agency by means of which all the persons engaged in the industry and in the industries subsidiary to it (collection of earth and firewood) are financed. The profits of the *Sayindaing* can be increased in two ways: first, by providing capital for him at a reasonable rate of interest; second, by enabling him to take his jars for sale to Magwe or to Lower Burma. Provision of capital on co-operative rates would save about Rs. 110 a year. The reason why *Sayindaings* are now unable to raft their jars to Magwe is that they cannot, for financial reasons, refrain from selling their jars until they have accumulated the five furnaces of jars which are required to make a raft. If they could do so, their profits would be increased by about Rs. 250 a year. The relief in these two respects would, therefore, enable them to increase their profits from Rs. 580 to Rs. 940 a year, an increase of more than 60 per cent. The above represents the state of the industry at the end of 1914. Since then a co-operative credit society has been established for the provision of capital, but it is understood that co-operative sale has not yet been organised, and that the jars are still rafted to Magwe by middle-men.

The Kyaukmyaung industry is the most important pottery industry in Burma and differs in many respects from the ordinary potteries. A fairly typical example of the latter is found at Ayadaw village in the Lower Chindwin district, where pots for collecting toddy juice and boiling jaggery are made. The potter takes out a license at Rs. 5 for excavating earth and collects and carts the earth himself. His only plant is a potter's wheel together with a few instruments for dressing the pots after burning. The pots are burnt in the open air with straw and firewood, locally collected by the potter, and sold to villagers from 8 or 10 miles round who come to buy them. The industry is subsidiary to other occupations and lasts only from the middle of November to the middle of February. Practically no capital is required and very little hiring is done, the potter being assisted by the members of his family. About Rs. 80 is made in the season. Occasionally two men combine to take out a license for extracting earth and share expenses and profits equally.

Another example of a whole-time indigenous industry is found in the manufacture of Burmese saddles at Kyehmon and Monywe on the Alon Branch Railway in the Lower Chindwin district. These saddles are used all over Burma; and Kyehmon is practically the only place at which they are made. About 250 families are dependent on the industry, but the principals number only about 70 families. The materials used are flannel, most of which is imported from Holland or Germany, goat skins imported from India, coarse cotton cloth woven in Burma or calico made in India, cotton yarn imported from India and England, imported silk yarn from China, imported woollen yarn, locally made cotton yarn and locally obtained materials for stuffing the saddles. About half the imported materials are bought in Mandalay and half from the local shop. Practically all the local shop transactions are on credit and about half the Mandalay transactions are on credit, interest in both cases being recovered in the form of an increased price. The enhancement in Mandalay is about 10 per cent. and the local credit prices are about 20 per cent. above the Mandalay cash prices. The saddles are made of several qualities and the following shows the average cost of manufacture and profit per 100 saddles:— Saddlery.

Goat skin saddles.

	Rs.	A.	P.
Cost of materials	107	0	0
Cost of wages	44	0	0
Total .	151	0	0

		Rs.	A. P.
Selling price		175	0 0
Profit		24	0 0
Lowest grade flannel saddles.			
Cost of materials		98	0 0
Cost of wages		78	0 0
	Total	176	0 0
Selling price		200	0 0
Profit		24	0 0
Medium grade flannel saddles.			
Cost of materials		183	0 0
Cost of wages		150	0 0
	Total	333	0 0
Selling price		400	0 0
Profit		67	0 0
First grade flannel saddles.			
Cost of materials		233	0 0
Cost of wages		228	0 0
	Total	461	0 0
Selling price		550	0 0
Profit		89	0 0

The making of reins is a separate industry. They are also made in several grades and the profit varies from Rs. 14 to Rs. 142 per 100 reins. Bridles, cruppers, ornamental tassels, girths, stirrup ropes, and *numdahs* are sometimes made by independent workmen and sometimes by workmen hired by the principals in the saddle-making business. Stirrup irons, bits and the rings used for fastening the girth are bought ready-made in Mandalay or from local shops.

The industry is financed through the principals in the saddle-making business, the rein-makers being comparatively unimportant and requiring little capital. The saddle-making capitalists are known as *konshins* and procure all the materials, employ the labour required and sell the saddles. They are financed partly by means of loans, running up to Rs. 1,000, taken at Rs. 2-8 per cent. per mensem from privately established local credit societies; but mostly through the expedient of purchasing materials on credit. It is estimated that about Rs. 50,000 a year is spent in the local shops on the purchase of imported materials and probably nearly as much more is spent in Mandalay. Capital is turned over about twice during the year and it is estimated that, on the basis of cash payments for materials, the profit on capital is about 20 per cent. at each turn-over if the saddles are sold on the spot. The distribution of the saddles has not been organised. Some are sold to traders who come to the places of manufacture from Mandalay and elsewhere. Some are taken for sale to Lower Burma by the *konshins* themselves; and some are hawked round by middle-men from Kyehmon and the surrounding villages who take the saddles from the *konshins* on credit and sell them in the neighbouring districts or in Lower Burma. If a *konshin* takes his saddles to Lower Burma and sells them himself, he can make an extra profit of about 30 per cent. on his capital; but few *konshins* can spare the time to hawk round saddles. The above profits are estimated on the basis of cash price for materials. As a matter of fact, most *konshins* work very largely on credit and their profits are reduced by anything from one-third to one half on that account. The hire of workers employed in the industry is very small. Owners of sewing machines can make Re. 1 a day and upwards; but others seldom make more than eight annas a day and in some cases as little as two annas a day is made. The prospects of the industry would be considerably improved by the provision of adequate credit facilities and by the organisation of distribution. It is also probable that considerable relief could be given by the wholesale purchase of materials. But as there was no opportunity of investigating the cost of materials at Rangoon, the extent of this relief cannot be stated. The price of flannel is the most important item in the cost of materials. It varies from twelve annas to Rs. 2-8 a yard for cash at Mandalay according to quality and even the best quality used seems to be very inferior.

Sandals. Another whole-time industry is the making of Burmese sandals at Kanbya, a group of villages 7 miles north-east of Monywa in the Lower Chindwin district. Four villages here contain 80 principal sandalmakers, 200 hired sandalmakers and 16 hawkers. Four resident traders buy flannel for the sandals in Mandalay and sell it to the principal sandalmakers. The materials required are—flannel bought from the four village traders; sole foundations,

made of the sheaths of maize husks and the fruit stem of the betelpalm, which are known as *Pawabon* and are bought ready-made in Mandalay through the village traders; strips of the sheaths of toddy palm leaves; buffalo hides obtained from the agent of Messrs. Fabricius & Co. at Monywa; sewing cotton made in Bombay and bought at Monywa; German dyes for dyeing the cotton; local cotton yarn; and rice paste. The flannel part of the sandal is pasted on the upper surface of the *pawabon* or sole foundation. To the lower side of the *pawabon* is affixed the strip of toddy palm sheath and the whole is sewn on to a sole of the buffalo hide leather and furnished with a toe strap made of flannel stuffed with local cotton yarn. The manufacture of these sandals is highly specialised and the various processes are performed by different workmen. For example, the preparation of the sole of buffalo hide consists of 6 processes, of which one is done by home labour and the remainder by hired labour; and the preparation and affixing of the toe straps consists of 6 processes of which two are carried out by home labour. Sandals are made in two sizes for men and in one size for women; and for each size there are several qualities according to the quality of flannel used in the manufacture. There are four sorts of superior flannels, two sorts of medium and two sorts of inferior flannels. The economical utilisation of the buffalo hides requires that sandals of all three sizes should be made by the same sandalmaker so that the calculation of expenses and profits is rather complicated. One hundred viss of hide is sufficient for 100 pairs of large sized men's sandals, 200 pairs of small sized men's sandals and 350 pairs of women's sandals; and the cost and profit on the sandals made from this quantity of hide with flannel of various grades is shown below.

Superior flannel.

	Rs.	A.	P.
Cost of materials	309	0	0
Cost of labour	83	0	0
Total	392	0	0
Selling price	440	0	0
Profit	48	0	0

Medium flannel.

	Rs.	A.	P.
Cost of materials	272	0	0
Cost of labour	80	0	0
Total	352	0	0
Selling price	370	0	0
Profit	18	0	0

For inferior flannel sandals, the pieces of hide, which cannot otherwise be utilized, are used. The profit cannot be exactly calculated, but is said to amount to Re. 1-4 per 100 pairs. The sandals are sold in the village to pedlars who take them all over Burma, but chiefly down the Irrawaddy as far as Prome. Great numbers are also taken by bazaar sellers at Pagoda festivals in the dry zone. The principal sandalmakers are the persons through whom the industry is financed. They obtain all the materials, hire the labour and sell the sandals. For buffalo hide cash must always be paid. Other materials can be got on credit, the usual system being the payment for the materials last purchased at the time the next purchase is made. Flannel is bought in this way from the village traders, and the village traders buy it on the same system from the Mandalay traders. The pedlars also get the sandals from the sandalmakers on the same system. The result is a general enhancement of prices. Thus superior flannel which costs Rs. 26 for 10 yards for cash in Mandalay is sold at Kanbya for Rs. 29 for 10 yards; and medium flannel which is bought for cash at Mandalay at Rs. 19 is sold in at Kanbya at Rs. 22-8. Inferior flannel bought in Mandalay at Rs. 7-4 is sold at Kanbya at Rs. 9. It takes pedlars about two months to do a selling tour so that the sandalmaker is a long time out of his money and so is the flannel seller. Loans have, therefore, to be taken, as well as purchases on credit; and a principal sandalmaker, paying cash for hides only, requires about Rs. 300 or Rs. 400 capital on which to get along. Rates of interest are fairly low and a substantial man pays only from Rs. 2 to Rs. 2-8 per cent. per month. Capital is turned over about 3 times during the year and there is a profit of 6 or 7 per cent. at each turn-over. The substitution of cash for credit purchases of materials would increase the profits by at least one-third. Hired workers earn on an average about eight annas a day for men and four to six annas a day for women. The owner of a sewing machine can earn Re. 1 or more a day. In spite of credit difficulties, the industry has brought considerable prosperity to the villages, which have increased from 180 to 464 households during the last 20 years. It would be greatly benefited by the establishment of a Co-operative Society for the provision of capital and the co-operative purchase of materials. It would probably be found that materials could be purchased much more cheaply in Rangoon than in Mandalay. The formation of a Society would, however, be met by considerable initial difficulties because the system of credit has resulted in the sandalmakers having fallen completely into the hands of traders in flannel.

The above are given as concrete instances of the manner in which village industries are carried on in Burma. If desired, further examples can be given. I shall now endeavour, as far

Co-operative Societies.

as possible, to answer the questions so far as such industries are concerned. I have no useful knowledge of what may be called foreign industries and the remarks which are offered do not apply to them. As regards financial aid, I think the only feasible method of assistance is by means of Co-operative Credit Societies. The persons engaged in village industries usually form, more or less, an organised community and possess the intimate knowledge of each other's circumstances which is favourable to successful co-operation. The capital required is usually not very large and is not beyond the means of the present co-operative organisation in Burma to provide. Societies could be easily established on practically the same basis as Agricultural Co-operative Societies as regards credit; but, in addition to providing credit facilities, it is probable that in most cases either co-operative sale or co-operative purchase of materials or both should be an object of the Society. As a preliminary to the formation of such societies, a survey of the indigenous industries of the province is necessary in order to ascertain, in regard to each industry, the probable benefit of a society, the objects for which it should be formed, the approximate amount of the average loan which should be given to members, the times at which capital is required and should be repaid, and the type of society which would be of most benefit. Capital for the societies would come from the central co-operative banks in which investments are made by people of all classes. In the course of time each society would be able to accumulate capital of its own. I do not think that any financial assistance except the organisation of Co-operative Societies should be given by Government to indigenous industries.

Technical aid. As regards technical aid, the greater number of the indigenous industries in the Province do not require it. Their products do not enter, in many cases, into competition with imported goods and the methods by which they are produced are peculiar to the country and are not susceptible of improvement by the introduction of foreign methods. To this category belong lacquer work, Burmese umbrellas and the making of Pegu jars, etc. But in regard to industries, such as silk weaving, the products of which have to compete with imported goods and which are carried on by methods more or less similar to those employed elsewhere, technical aid is required and the best sort of aid, in my opinion, is the demonstration of improved methods by experts. A beginning has already been made in this direction in the establishment of a weaving institute at Amarapura with good results.

Marketing facilities. I do not think that any continuous assistance has been given by Government in the past in the direction of providing marketing facilities for the products of indigenous industries. The Arts and Crafts Exhibitions held annually at Rangoon bring indigenous products mostly of the curio class spasmodically to the notice of the European community: but probably effect no permanent improvement in marketing. Markets for ordinary products are as yet entirely unorganised and the method of sale is quite haphazard. I think that the survey of indigenous industries, which should be undertaken, should have, as one of its objects, an enquiry into the present systems of marketing, and that, when the facts have been ascertained, such measures as may be practicable should be undertaken to improve the marketing and to bring the buyers into more direct connection with the manufacturers. It is certain that, with the present system, or want of system, an unduly large proportion of the profit is absorbed by middlemen; but until further enquiry has been made, the lines on which assistance in marketing should be afforded cannot very well be indicated.

Land policy. The land policy of Government is probably not favourable to industrial development generally. Industrial development presupposes the existence of persons who have some capital or the means of commanding capital, and who desire to apply their capital to industry. The small holding land policy of Government, however, is unfavourable to the accumulation of capital and, combined with the Burmese law of inheritance, tends to keep the maximum population on the land at the minimum standard of living. Co-operation is only a partial means of correcting its defects. Whether the land system is, or is not, a discouragement to industry, there can be no doubt that industries are becoming more and more necessary as means of livelihood subsidiary to agriculture. The uncertainty of crops in the dry zone of Upper Burma has always forced the agriculturist there to supplement his agricultural income either by engaging in industry, or in labour subsidiary to agriculture in the more favoured parts of the province. In Lower Burma, the agriculturist can, with comparative certainty, obtain a crop; but, with the enormous rise in the cost of cultivation which has taken place inside the last 10 or 15 years, the margin of profit left for the subsistence of the agriculturist tends to become smaller. Although crops are fairly certain in Lower Burma, the amount of crop varies from year to year within wide limits; so that the margin of agricultural profit, after deducting cost of cultivation, is an extremely uncertain quantity and may be double in one year what it is in the next. The uncertainty which the increased cost of cultivation has brought about in agricultural profits has hitherto been obscured by the progressive rise in the price of rice, but this rise is not likely to go on indefinitely. It is, therefore, necessary to encourage industries, and especially village industries, with a view to mitigating the effects of short harvests even in parts of the province which have hitherto been considered as the most favoured agriculturally. The increase of population and the fact that the extension of cultivation in Lower Burma is approaching its limit point in the same direction. Lower Burma is now practically a one-crop country. If the population while largely increasing in numbers, as it is certain to do, remains entirely dependent on rice, the possibility of distress owing to the partial failure of the crop will, as time goes on, become more and more evident.

Official organisation. At present there is no organisation in the province for the development of industries. As already indicated, I think that the development of indigenous industries should be one of the

objects of Government and that an organisation for fostering this development should form a part of, or work in close connection with, the existing co-operative organisation. The first main function of the organisation should be the accurate ascertainment of present conditions with a view to affording adequate credit facilities and improving the methods of purchase of materials and distribution of products. For these purposes technical experts are not required. The survey of existing conditions which should be carried out, would probably indicate the industries in regard to which the demonstration of improved methods by experts is necessary.

Assistance from local bodies.

The most feasible means by which Municipalities and Local Boards can assist in promoting industrial development is by the grant of assistance to persons who desire to study improved methods at central demonstration stations.

Transport facilities.

Communications in Burma are in a backward state and there is no doubt that this has hindered industrial development as well as other sorts of development. The question of the improvement of communications is now being considered. As regards railways, considerable annoyance and expense are caused to consignors of goods by the impossibility of obtaining trucks except on irregular payments to subordinate railway officials.

(*Witness did not give oral evidence.*)

WITNESS No. 446.

MR. W. B. BRANDER, M.A., I.C.S., *Deputy Commissioner, Tavoy.* *Mr. W. B. Brander.*

WRITTEN EVIDENCE.

Note on certain problems connected with the development of Mining and other industries in Burma.

Wolfram.

I have been Deputy Commissioner of the Tavoy District, the main wolfram-producing area in Burma, since May 1914. For the period from October 1915 to February 1917 I was on special duty in connection with the effort made to increase production. In this effort I had the good fortune to be associated with Mr. J. Coggin Brown of the Geological Survey of India as Technical Adviser.

The results are indicated in the following statements :—

Agricultural year.	Ton.	Cwt.	Qr.	Lbs.
1910-11	721	13	2	16
1911-12	1,407	3	2	17
1912-13	1,453	2	1	12
1913-14	1,669	11	1	20
1914-15	1,644	10	0	3½
1915-16	2,346	10	2	7
1916-17	3,487¼	7	1	10

Surveys for Industrial purposes.

For the development of mineral production in Burma as well as of such other industries as rubber, cocoanut, tapioca, tea cultivation, etc., the first essential is that Government should know where minerals are likely to be found and where these products can best be grown and should have experts to advise on the best methods of development. No systematic geological survey of the whole of Burma exists. No attempt has so far been made to publish, to firms interested, the potentialities of particular districts in the matter of rubber and cocoanut plantations. When I came to Tavoy I discovered that great areas were most suitable for cocoanuts and have at last interested one firm which is shortly sending an expert to examine the areas recommended for the cultivation of the product.

Department of Industries.

If the resources of Burma are to be exploited, the first essential then to my mind is that a special department should be immediately constituted whose duty it should be :—

(*a*) to collect statistics of the existing production of important industries;

(*b*) to co-ordinate the work done by existing departments such as the Forest and the Agricultural Departments and a Mines Department to be created;

(*c*) to examine systematically the potentialities of the province;

(*d*) to provide information for those desirous of exploiting a particular product;

(*e*) to advise Government on the best methods of development.

Had such a department been in existence when the need for wolfram was first recognised, the difficulties, pioneers in the industry had to face, would have disappeared.

Transport facilities. The next essential to my mind is that the province itself must be opened up. No other district in Burma has had so much money spent on road making within the last two years as Tavoy. Experience here has proved that roads can be made quickly and well even under climatic and labour conditions adverse to rapid and efficient construction.

Roads have enabled areas previously undeveloped or unexamined to become important producing centres, have permitted the exploration of tracts hitherto inaccessible, have made for quickness of transport and for the introduction of mechanical devices and have promoted effective Government control. I am convinced that new roads in Burma will quickly pay for themselves owing to the increase of revenue and the reduction of costs.

Technical expert aid. In organising a new industry or in developing an existing industry, Government must in a province like Burma be prepared to provide a certain amount of technical advice free of cost. I do not advocate fostering an industry which has no likelihood of ever reaching the stage at which it can support itself, unless, of course, very strong political reasons exist in favour of establishing or retaining any particular industry. In the early stages of mining industries, however, technical advice may save not only those initiating the new venture, but Government itself, much money and trouble. Between, I think, February 1914 and October 1915 no Government technical adviser of any kind visited Tavoy, with the result that during the first six to nine months after the demand for tungsten became known most of the Technical Advisers' time was taken up in visiting concessions and advising on the best methods of securing an increase of output. Much valuable time was spent in rectifying errors, in pointing out schemes which should have been put in operation months before and in giving elementary advice on geological features and methods of mining.

In many cases, the advice had to be forced on concessionaires in a way which only the requirements of the moment could have justified.

Provincial Mines Department. I have referred in paragraph 1 of this note to the creation of a Mines Department to be created as part of a Department of Industries. In my opinion a department of this nature is essential in all provinces in which mineral wealth exists. This department should be under the control of the Local Government and should be no more part of the Government of India than the Education or the Medical Departments. It should be divided into two sections, one made up of experts who have specialised in economic geology and the other of experts in pure mining. The former would be advisers on all general problems connected with the development of the mineral resources of the province, the latter would act as a Mines Department for the purposes of the Indian Mines Act and advise on purely technical matters. The organisation of the department, the differentiation of functions and the division of control are problems which would quickly solve themselves when the scheme was in working order. The existing form of centralisation whereby the Government of India practically controls all the highly trained technical services has hampered development and made for stagnation.

Mining and Prospecting Rules. If centralisation in the matter of experts has been a hindrance to the development of mining, no less so has the formulation of one set of Mining Rules for the whole of India. A detailed criticism of the rules would be out of place here but I may note on one or two provisions. My chief idea is to make the rules as little cumbrous and as simple as possible.

The Certificate of Approval appears to me to be a useless formality, if the conditions of the Prospecting License are properly enforced and slightly amended. The value of the Priority rule (23) is open to question. Under the new Mineral Directions (Burma) all applications for Prospecting Licenses which the Collector proposes to issue or renew have to be forwarded to the Financial Commissioner or Local Government for sanction. This procedure may result in serious delays which will tend to retard development. My experience in Tavoy has been that by speeding up the disposal of applications, much more country is prospected and the industry expands more quickly. I should, however, restrict the area a Collector may grant to 1,000 acres, the Financial Commissioner to 2,500, and the Local Government to 5,000, and I should not allow any one firm or person to hold more than 5,000 acres in all under Prospecting License or Mining Lease at one time. I have seen so much effort dissipated when large areas are given that I am convinced that the policy of the unrestricted grant of areas under Prospecting License should now cease.

I should also provide that a Mining Lease shall be applied for before the end of the 2nd year [rule 30 (*i*)]. I know of no area in this district of which its possibilities cannot be determined within 18 months.

I see no reason why Government should not levy fees during the period between the expiry of the last renewal of the Prospecting License and the issue of a Mining Lease. Either the Mining Lease should date from the expiry of the Prospecting License or the fees payable during the last renewal should continue to be paid up to the date of issue of the Mining Lease [rule 30 (*ii*)].

The royalty rates might, in my opinion, be more elastic [30 (*iii*)].

Options with a working agreement should explicity be declared to be transfers [30 (*vi*)]. Sub-section (ix) of rule 30 is much too wide because it requires the submission of every petty dispute to the Local Government.

I do not think that any right to a renewal of a Prospecting License or to the grant of a Mining Lease should be conferred on concessionaires by rule. I believe that mining development has been hampered by the fact that areas have been frequently taken up as speculative ventures. No work is done on these concessions. They remain undeveloped and even unprospected. Powers should be conferred whereby renewals of Prospecting Licenses and the grant of Mining Leases may be refused should the development be deemed insufficient. I do not believe that this procedure would hinder legitimate enterprise.

Rule 50 (*viii*) should be made to apply only to leased areas which have not previously been held under Prospecting License.

Once during the tenure of the lease permission might be given to a lease-holder to reduce his area with the previous sanction of the Local Government.

Even the amendment, however, of the Mining Rules does not appear to me to be sufficient to meet the demands of a progressive policy. I should prefer to allow each Local Government to frame its own rules either under a special enactment or with the sanction of the Government of India. Each province has to face its own problems in mining development, perhaps more than in any other phase of its activities and rules, to suit its own needs, are in my view a necessity : nearly every mining field evolves on lines of its own and the imposition of a fixed code for all centres seems to me the negation of efficient administration. I am not sure that the Indian Mines Act would not also be the better of being made a provincial enactment.

Certain subsidiary suggestions may be made with a view to secure the rapid growth of industrial (particularly) mineral development— General suggestions.

(*a*) Technical schools should be opened at centres of industrial life. A mining school in Tavoy which might be part of the University of Burma would be of great assistance in training the future Mines Managers.

(*b*) In addition to the geological survey of areas known to be likely to contain mineral deposits, the formation of prospecting parties for specific minerals, such as tin, would not be outside the scope of Government's effort. Their discoveries should be made public and applications called for. The licensee would of course be required to pay part at least of the cost of the party.

(*c*) Good topographical maps are essential and every effort should be made to ensure that the one-inch survey of Burma is completed as soon as possible.

(*d*) Every assistance should be given to those who are prepared to utilize water power. If the scheme involves the destruction of timber, I should be prepared to waive all claims to royalty thereon, provided that the scheme had been approved by the Mines Department.

(*e*) Special arrangements might be made for the utilization of convict labour on road-making, quarries and initial schemes of development, when other labour is unprocurable.

(*f*) Some concession in the shape of a rebate of revenue for a specified number of years might be given to those introducing a new industry or commercial product.

(*g*) A section of the Department of Industry should be devoted to the examination of the commercial uses to which such common products, as *dhani*, mangroves and bamboos, may be put.

(*h*) When an industry has attained a sound footing, every effort should be made to secure co-operation between those engaged in the industry and Government officials intimately connected with its development.

(*i*) Co-operative societies might be formed amongst those engaged in such industries as rubber planting, with a view to procure expensive mechanical appliances as for clearing scrub jungle.

(*Witness did not give oral evidence.*)

NAMTU.

WITNESS No. 447. *Mr. T. E. Mitchell.*

MR. T. E. MITCHELL, *Resident Manager, Burma Mines, Limited.*

WRITTEN EVIDENCE.

Q. 25. Yes, particularly as regards mining. Industrial surveys.

Q. 26. This survey should be organised with a view to making a re-survey of those areas of the province where the developments of recent years have demonstrated the probability of developing successful mining ventures.

The survey should be directed toward defining specific areas where profitable mineral deposits are most likely to be developed. The correlation of field results by a Mining Geologist of wide experience would materially enhance the value of the work.

Q. 27. The result should be published in pamphlet form, preferably a pamphlet dealing with each separate district.

Supply of raw materials.

Q. 40. In unsettled areas forest products should be supplied free of revenue to prospects in the development stage and to *bonâ fide* agriculturists, for it must be borne in mind that the Company or individual who undertakes the development of a prospect or the agriculturist who settles in a new district is engaged in a venture that should be given all possible Government support; for it is in the development stage when possibilities are unknown factors and finance is most difficult; it is thus that Government assistance is most required; this can best be afforded by a liberal forest policy.

Land policy.

Q. 41. More prompt action on applications for land for industrial purposes, and where permission is granted an applicant to occupy land definite rules governing maximum rental should be stated.

Q. 42. All land concessions should be made on the principle that the industrial development will result in increased commercial activity and the benefits to the State are vastly more important than any revenues to be derived from land rents.

Government should proceed on the principle that once they are assured of the *bonâ fides* of the Company or individual and are satisfied as to the soundness of the industry in which they propose to engage time is an all important factor.

In the construction or development stage the ground rents should be moderate, and when the productive stage is reached the rents should not be higher than that of surrounding or other similar land.

Q. 87. The publication of monographs on any subject is most beneficial to those interested in such enterprises. However, for the most part the monographs published are too academic, and when dealing with commercial features run too much to theory.

Copies of the publication should be obtainable at the headquarters of the district with which they deal. At present there is considerable time lost in trying to obtain maps and publications. If it were possible to obtain at Mandalay publications and maps dealing with Upper Burma, at Lashio publications dealing with the Northern Shan States, and at Taunggyi publications dealing with the Southern Shan States, valuable time would be saved to Companies or individuals operating in these fields.

Mining and prospecting rules.

Q. 103. In this section no material difficulties have been experienced, but an arrangement should be made whereby once a prospecting license is granted over an area the timber—other than reserved trees—immediately becomes available for development purposes without further reference to the Forest Department.

The annual ground rent should be a minimum, but a clause compelling development might be advantageously added.

The rules governing the use of explosives in development work should be altered, and while the present is not the time to legislate as regards explosive rules, it is essential that in quarrying work and in the development of prospects, rules permitting the use of explosives by the better and responsible type of gang would greatly facilitate operations.

Q. 104. I do not think it necessary or wise to develop minerals wholly at Government expense. A better way would be to legislate to protect and ensure the production of finished products of tungsten, antimony and other ores required to produce metals necessary for industries of Imperial importance and to facilitate the work by giving Government moral assistance and, if necessary, subsidies.

(*Witness here gave confidential evidence regarding the Forest Department.*)

Q. 106. The first necessary step towards reduction of cost of extraction is the construction of public roads. Burma is as a whole and especially so in the forested regions a "Roadless Province." Firms working the forests are obliged to construct their own roads entirely and in doing so they naturally seek their own interests, which are frequently of a passing nature. Judged from the point of view of the province as a whole, this means a great waste of expenditure and of opportunity. Close co-ordination between the Government and private firms, coupled with a liberal and helpful policy on the Government side would soon result in the construction of much road mileage, which would serve not only for extraction of forest produce—the first objective—but which would remain in perpetuity an asset to the province, reducing the cost of every branch of administration and assisting largely in the intercourse and enlightenment of the people, especially so of those tribes who, living in the remote forested regions, are now of a very low order of humanity and practically useless as citizens. A liberal policy of "Assisted Roads" then is the first requisite.

The services of the State Engineers should be placed fully and free of cost at the disposal of firms making roads and survey should be made gratis with advice.

In certain select instances branch railways should be equally assisted if they meet the same general objects aimed at in the case of roads.

The next suggestion is the improvement of rivers for floatation purposes by the removal of obstructions, construction of locks and side channels to avoid falls, etc. Private firms cannot undertake any large expense in this direction nor is it fair to expect them to bear the cost alone, as every such improvement is an asset to the Province as a whole and rivers are public highways.

Again the Forest Department could do a great deal in the way of assisting private firms by adopting an educational policy. The experiences and observations of their officers and of all forest works should be printed and issued free of cost in the form of pamphlets similar to those by the Board of Agriculture and Fisheries in England. These pamphlets should be made as comprehensive as possible, and not too theoretical.

An Advisory Bureau, with a good library of standard works catalogues of manufacture, and some samples of tools should be established at a central point and a Forest Engineer appointed to advise on all questions; his aid and advice should be available and his visits to the localities obtainable by private firms free of cost.

Q. 107. This query, as worded, is a matter of pure forestry. The only suggestion that I can think of is that the present system of a fixed rate of royalty for specific species should be altered to one of varying rates, these to be so regulated as to bring cost of working in accessible areas down to more of an equality with those more easily extracted from. Under the present system of equal royalty for any timber—say teak—regardless of how situated leads to easy areas being worked out and others left. This, together with a sound policy of roads, would do much to facilitate general forest working.

Q. 108. See answer to question 106.

ORAL EVIDENCE, 28TH JANUARY 1918.

Note.—*Mr. A. F. Kuehn accompanied Mr. Mitchell.*

Hon'ble Sir R. N. Mookerjee.—Q. I have a few questions to ask on points which are not touched in your written statement: how many years have you been here?—*A.* Four years.

Q. How many years as manager?—*A.* Two years.

Q. Have you experienced any difficulty in the supply of labour?—*A.* Last rainy season for four or five months we did but there was no numerical shortage: we were doing more work than in previous years.

Q. Otherwise normally you have no difficulty?—*A.* Normally, none.

Q. What class of labourers do you get here, I mean what class or nationality?—*A.* About 80 per cent. of our labour is Chinese. With Chinese I include Maingthas (Chinese Shans) and Kachins; of the latter there are a very few. The maingtha is our best class of labour and constitutes about 90 per cent. of our underground men, 80 per cent. of the men employed at the smelter and 100 per cent. at the mill.

Q. And the remaining 20 per cent. who are they?—*A.* The remaining 20 per cent. is composed approximately of 3 per cent. Burmans and 17 per cent. Indians.

Q. How do you house all this labour?—*A.* We have standardised on houses of adobe brick, of which we built 19 last year, and have 38 more in course of construction which will be completed within a month. These houses vary from 108′ to 121′ in length by 16′ wide.

Q. How many are there now?—*A.* With those in course of erection 73. These houses will accommodate all but a few of our men; those men will live in bamboo houses pending the completion early next dry season of sufficient brick barracks for their accommodation.

Q. Are these bamboo houses built by the Company?—*A.* Yes.

Q. Do you charge them any rent?—*A.* No rent is charged either for the bamboo or for the brick houses.

Q. What is the superficial area, roughly speaking which each man occupies?—*A.* Our standard rooms are 12′ by 12′; these rooms are occupied by two single men or one family. We have a few rooms 20′ by 12′; these are occupied by four single men. We also have a few rooms 30′ by 14′ for some classes of Chinese who prefer living together in larger numbers; these rooms are occupied by ten single men. The superficial area averages about 70 square feet per man.

Q. Does your sanitary authority approve of the crowded system?—*A.* This is permitted only in a few cases during the dry weather when larger numbers of Chinese who come from the same villages insist upon living together. A close sanitary control is exercised over all these buildings.

Q. Do they keep the doors open?—*A.* Usually.

Q. Do you give them any compound around their quarters?—*A.* The houses are not enclosed at all, there is plenty of room.

Q. Do they have any vegetable garden?—*A.* So far very few of them have.

Q. What arrangement have you got for their education? Do you give them any education?—*A.* At present we have no public school, but for a considerable time we have

been negotiating with Government for the establishment of an Anglo-Vernacular School to which the Company offered liberal contributions towards its erection and maintenance.

Q. Has that question been finally settled ?—*A.* We have just recently been assured that such a school will be erected in the near future.

Q. So you have in contemplation the opening of schools for them ?—*A.* Yes, in the very near future.

Q. Do you take any apprentices in this mine of yours ?—*A.* A few.

Q. What class of men are they ?—*A.* Almost exclusively Punjabis.

Q. Generally speaking they are not educated ?—*A.* A very few are ; but I can give you some statistics relating to this point if you wish.

Q. Kindly send a spare copy* to the Secretary because it will save time now. What police arrangements have you got to preserve peace here ?—*A.* We have both State and civil police.

Q. Do you contribute anything towards the cost of that ?—*A.* An allowance of Rs. 100 a month is paid to the Circle Inspector of Police by agreement with Government. The Company also erected their present barracks and maintain them.

Q. Government keeps police here ?—*A.* Yes.

Q. Do they come inside your compound ?—*A.* They have access to all our works.

Q. They have nothing to do with the Company ; to guard your lead or silver ? You do not want them for that ?—*A.* No. We applied to the Government for the use of the Inspector and some of his constables to guard our silver in transit to Rangoon, but this was refused. However, negotiations are now being carried on with Government for the establishment of Military Police at Namtu.

Q. What are those negotiations and what was your proposal ?—*A.* Negotiations were for a Company of Military Police to be stationed here, of which the Company would engage 43 for guarding purposes. Our proposal was to pay an annual amount of Rs. 10,000 for the Military Police, also an allowance of Rs. 1,200 a year to the Inspector, and contribute £500 towards the erection of barracks. It was the intention of Government that these men should replace the present State and Civil Police with a few exceptions.

Sir F. H. Stewart.—*Q.* What State ?—*A.* Tawngpeng, one of the Northern Shan States.

Hon'ble Sir R. N. Mookerjee.—*Q.* Can you tell us what is the total amount of expenditure ? You pay Rs. 10,000 and the Government pay Rs. 10,000, altogether Rs. 20,000; is that the total ?—*A.* I cannot say what the total cost of maintaining a Company of Military Police at Namtu would be.

Q. Who would control them ?—*A.* Government.

Q. These men will be just like your durwans here ?—*A.* Yes. The 43 men referred to would replace about 30 durwans.

Q. Will they carry out your orders or Police Officer's orders ?—*A.* They will carry out the orders of the police, and any complaint which the Company has would be made to the man in charge.

Q. You have not heard anything about the final orders ?—*A.* That proposition was not accepted.

Q. Have you heard any other ?—*A.* No other has been submitted.

Q. So far the police here do not interfere in any way with your labour ?—*A.* Not at all.

Mr. C. E. Low.—*Q.* With reference to this special police, do you know the arrangement that Government have with railways about railway police officers ? It might possibly serve as a guide.—*A.* I do not.

Q. In your answer to Question 42, you say "In the construction or development stage the ground rents should be moderate, and when the productive stage is reached the rents should not be higher than that of surrounding or other similar land." Do you mean here the surface rent apart from royalty ?—*A.* Yes.

Q. Is that not at present the same as the land revenue rate ?—*A.* No ; the land rent varies.

Q. For the same land ?—*A.* We are paying a certain rent for the Mine area of Re. 1 per acre : this, however, is deducted from the royalty paid on mine production. On our other concessions we are paying a rent of Rs. 5 per acre, while the indigenous population, I understand, get similar land without rent, except the *thathameda* tax which of course is paid by all our permanent employees. In addition we pay a surface rent of Rs. 2 an acre on that portion of our Mine area occupied by buildings and plant.

Q. There is a minimum dead rent fixed, and the surface rent is the assessed revenue payable under the land law of the province, or if no such law is applicable, arrangements have been made by Government subject to a maximum or a minimum : do you know the reason why these rents are fixed in that way ?—*A.* I presume it is because they consider certain land more valuable.

*See Appendix.

Q. No, it is to ensure a certain amount of material being won. In certain cases does not royalty include dead rent?—*A.* Yes, in the case of a mine it does.

Q. It includes dead rent but not surface rent. You also speak of a certain amount of development work being insisted upon as a means of ensuring *bonâ fide* exploitation: do you know whether it is practically insisted on in America?—*A.* In the United States the mining laws are that to locate a claim, which is composed of 20 acres, a hole 10 feet deep must be sunk exposing a vein. Each successive year in order to hold the claim \$100 (dollars) worth of work is necessary. When a total of \$500 (dollars) worth of work has been done on the claim a patent may be applied for. After a patent is granted the property is then subject to ordinary land taxation which is very light.

Q. You suggest that timber other than reserve timber should immediately become available without further reference to the Forest Department; what is the existing practice here? Are these forests here under the control of the Forest Department?—*A.* Yes, we have a forest reserve of about 98 square miles.

Q. Is that disposed of on terms?—*A.* Yes.

Q. What rent do you pay?—*A.* We pay no land rent but a royalty of 5 annas per 100 cubic feet on fuel, and on timber amounts ranging from Rs. 4 to Rs. 35 a ton.

Q. But your answer I take it refers to the forest standing on the actual mine area?—*A.* What I meant was that when a prospecting license is taken out over a certain area, the timber on that area except reserved trees ought to be placed at the disposal of the person who has taken out the license for prospecting or development work without further reference to the Forest Department.

Q. In the case of say a metal like manganese in a teak forest, would you pursue the same system?—*A.* Teak is a reserved tree.

Q. Have you any definite forest rules for mine areas? In some provinces they have a very definite set of rules which apply to the use of the forests in concession areas, are there such rules in regard to forests in Burma?—*A.* Prospecting licenses permit of the conversion of unreserved trees of small size: permission to use the larger ones must be obtained from the Divisional Forest Officer. Royalty is paid on all timber cut.

Hon'ble Mr. H. Thompson.—There are mining regulations which declare to what extent concessions can be granted. I am afraid my mining manual is not with me; it is all laid down there; I cannot say whether they apply to the Shan States or not, they apply to Burma generally, but one has to study the whole thing to find out what particular rules apply to the Shan States.

Mr. C. E. Low.—*Q.* As a matter of fact, is timber allowed free for development?—*Hon'ble Mr. H. Thompson.*—It is allowed for actual mining operations.

Mr. C. E. Low.—*Q.* Your answer to Question 104, you would legislate to protect and ensure the production of finished articles and of tungsten, antimony and other ores required to produce metals necessary for industries of Imperial importance and to facilitate the work by giving Government moral assistance and if necessary subsidies, what form of legislation have you in mind?—*A.* The most difficult time in the development of any enterprise is of course when it is in its early stages, and as I consider all minerals of Government importance. I should think that a subsidy for the development of the enterprise would be a good thing, especially in the case of minerals that are of the greatest Government importance, for oftentimes it is extremely difficult especially for a poor man to develop a property at his own expense; there are many mining failures as the result of it.

Q. But a development of this kind is not a poor man's proposition?—*A.* I think you will find that most prospecting and early development is done by men without much means usually miners.

Q. Well, it is possible, but that of course requires very little in the way of capital outlay?—*A.* Prospecting, which is the first step, requires very little capital, but any amount of dovelopment does.

Q. Don't you always get a number of people interested in mining operations ready to put up a certain amount and bring them up into a marketable proposition?—*A.* The usual procedure is that the prospector discovers the mineral and develops it to the extent that justifies either the formation of a new company or it being taken over by an operating Company. Very few Companies will have anything to do with a prospect unless it has either unusual promise or is opened up to the extent that sufficient ore of a high enough value is exposed to justify the expenditure necessary to determine its value as a mine.

(*Witness here gave confidential evidence.*)

Q. Your answer to Question 106 regarding construction of public roads: I suppose you would include also small railways? *A.* Yes, if they meet the same general object aimed at as in the case of roads.

Q. As a matter of fact your line I suppose is a private line and cannot carry public traffic, I mean your line from the metre gauge up to here?—*A.* We have no equipment for the carriage of passengers. This, however, does not prevent people from riding; no fares are charged.

Q. Do you carry goods for the public?—*A.* Yes.

Q. Have you had any request to carry timber?—*A.* Not to my knowledge.

Q. Do you know if much timber is carried along this metre gauge railway?—*A.* With the exception of that purchased by this Company in Mandalay and intermediate stations, I do not think a large amount of timber is handled on the Lashio branch.

Hon'ble Sir R. N. Mookerjee.—Q. Do you carry public goods?—*A.* Yes.

Q. Have you got any fare tariff given to you by the Government?—*A.* No. Originally freight charges on packages were instituted in order to cut down the number of passengers who travelled on our line for trading purposes only.

Q. You charge as you like?—*A.* Yes, but the charges are reasonable and no attempt is made to fix the rate at the maximum the traffic will bear.

Q. There is no rule given to you by the Government?—*A.* No, but on being informed in 1912 that the only goods carried in addition to Company's stores are stores required by the Company's employees, the Local Government granted us permission to make a charge for the carriage of these articles.

Q. And the Railway Board know that you carry public goods?—*A.* It is presumed that they do, as the subject has been referred to in the Junior Government Inspector of Railway's reports.

Mr. C. E. Low.—Q. To what would you attribute the failure of the Burma metre gauge railway to carry timber from above these hills?—*A.* Probably because no great amount of suitable timber is tributary to the line.

Q. But there seems to be a good deal of forest here?—*A.* Most of the accessible timber is of inferior quality.

(*Mr. Kuehn here gave confidential evidence regarding railway freights.*)

Mr. C. E. Low.—Q. Have you in mind the construction of any railway purely for forest purposes which would pay interest on the outlay more than what it would cost the Government to borrow?—*A.* Do you mean a road built by a Company through a forest purely for the extraction of timber?

Q. I am alluding to a system of forest railways which would pay 4 or 5 per cent on the outlay?—*A.* I have no specific case in mind.

Q. This line here is your own line for your own purposes; would a metre gauge branch here suit your purposes equally well?—*A.* Better.

Q. Have you ever considered the idea of approaching the Railway Company?—*Mr. Kuehn*: *A.* Yes, that was done by our Board of Directors in 1914.

Hon'ble Sir R. N. Mookerjee.—Q. Do you think that apart from your goods traffic there exists anything else from outside for a metre gauge branch?—*A.* The development of the agricultural resources of the country; also the probability of the development of new mining and other industries.

Mr. C. E. Low.—Q. To what extent could your mining capacity be increased?—*A.* To at least 2,000 tons of ore daily to the Mill and the resultant products out.

Q. And there will be consequent increase in the traffic?—*A.* Yes.

Sir F. H. Stewart.—Q. Referring to Mr. Low's question about forest roads, do I understand you to argue that such roads would pay interest on cost of construction? Do you consider it the duty of Government to provide such roads?—*A.* Yes, to assist in the erection of such roads as would serve the purpose of Companies exploiting the forests and be of service to the local population.

Q. Has Government any policy of "assisted roads" at all?—*A.* Not to my knowledge.
(*Hon'ble Mr. H. Thompson*: There is no regular policy in the matter).

Q. You would like to see an industrial survey made, particularly as regards mining, do you mean a survey carried out by the Geological Survey Department?—*A.* Yes.

Q. But you think the Geological Survey Department is doing useful work?—*A.* Yes, most useful work.

Q. Does that Department devote sufficient attention to Burma?—*A.* I think the number of Geologists ought to be augmented by at least three or four.

Q. Do you want three or four men permanently for Burma?—*A.* Yes, under the supervision of a capable and experienced geologist.

Q. Would that be sufficient? You don't press for the formation of a separate Gological Survey Department for Burma?—*A.* I think it would be better to keep the Burma branch under the Indian Geological Survey.

Q. I do not quite understand the first line of your answer to Question 40 where you say "In unsettled areas forest products should be supplied free of revenue to prospects in the development stage, etc." Do you mean timber for development?—*A.* Yes, for development purposes only.

Q. And then you say in answer to Question 41 "More prompt action on applications for land for industrial purposes, etc"; what is the procedure at present supposing a man wanted to take up land for industrial purposes?—*A.* As a rule there is considerable delay in obtaining leases.

Q. To whom do you make your application?—*A.* The application is made to the local authorities.

Hon'ble Mr. H. Thompson.—It would be to the Superintendent of the Northern Shan States. There is no Deputy Commissioner here.

Q. (To Hon'ble Mr. H. Thompson) Has he got power to deal with such applications?—*Hon'ble Mr. H. Thompson.*—*A.* The Local Government will deal with them.

Q. (To witness) Do you think serious delay is caused thereby?—*A.* That has been my experience, especially in obtaining leases and special renewals of prospecting licenses.

Q. Speaking of industrial monographs you say that "copies of the publications should be obtainable at the Headquarters of districts with which they deal. At present there is considerable time lost in trying to obtain maps and publications, etc.," You don't get them in Rangoon either, do you? Is it not the case that they have to be sent for from Calcutta?—*A.* Most monographs published by Government have to be obtained from Calcutta.

Q. You would like to see these stocked in Burma, if not in Mandalay, at any rate in Rangoon?—*A.* It would be a great convenience.

Q. Turning to your answer to Question 103 with reference to the rules governing explosives you think they should be altered and you say that explosives should be allowed to be used by the better and more responsible type of gang? What are the difficulties at present that you would like to see removed?—*A.* At present none but Europeans are allowed to handle explosives, and only those in possession of licenses.

Q. You mean individual licenses?—*A.* Yes.

Q. That is probably a temporary restriction?—*A.* With the great difficulty of getting Europeans at the present time, it makes it very difficult while prospecting in isolated places, I think there are some Indians and Chinese who are entirely reliable.

Q. But in normal times, that is, in pre-war time, wouldn't they be able to get license?—*A.* I do not think so, but I have had no experience in the matter.

(*Mr. C. E. Low.*—The Deputy Commissioner can grant licenses for any quantity up to 60 lbs.: you can keep up to 10 lbs. or something like that without any magazine precautions. Probably Mr. Thompson will know better.)

(*Hon'ble Mr. H. Thompson.*—I am not an explosives authority.)

Mr. C. E. Low.—*Q.* You can keep 10 lbs. without any difficulty; if you keep more than 10 lbs. you require a magazine is that the rule?—*A.* Yes.

Sir F. H. Stewart.—*Q.* I do not quite follow the idea that you suggest in your answer to question 104: you say "I don't think it necessay or wise to develop minerals wholly at Government expense, etc." Could you explain briefly what you mean?—*A.* The principal reason for my suggestion is that I think private mining concerns can do it better and probably more cheaply and more quickly.

Q. With regard to the improvement of rivers for floatation purposes, does Government do anything in the way of removing obstructions, construction of locks, etc., which you suggest?—*A.* Not to my knowledge.

Q. Has Government a man in its service to do that kind of work?—*A.* I do not know of any.

Q. Do you know if the Government has made any hydro-electric survey in Burma?—*A.* Not to my knowledge.

Q. Has any scheme of yours received any help from Government? Have you met with any obstacles?—*A.* We have had no help rather the reverse owing to very long drawn out negotiations.

Hon'ble Mr. H. Thompson.—*Q.* In connection with your answer to question 40, I understand that, as regards prospecting licenses, you think it is sufficient that the holder of the license should have all the timber which he needs for prospecting purposes and for use in the development of his prospecting operations, that is to say, he should have permission to cut down any timber within the area relating to his license: these are the existing rules; do you consider them to be sufficient.—*A.* Are they the existing rules in the Northern Shan States?

Q. They are the existing rules for Burma generally. I am speaking of the province as a whole; I think you may take it they do apply to the Northern Shan States so far as I am aware. Then you also speak of the supply of timber to *bonâfide* agriculturists: at present a portion of Burma represents crown lands, more than half of which is under inferior cultivation; the condition under which it is held is that so long as it serves any commercial purpose the holder must pay royalty, but otherwise it is entirely free of charge; is that not satisfactory, or do you think anything more is necessary?—*A.* Such rules, I think, would be quite satisfactory, but I do not think they—especially as regards mining apply to the Northern Shan States. I am under the impression that the holders of prospecting licenses are permitted to cut trees of small sizes only; for sizes necessary for most mine requirements

written permission would have to be obtained from the Divisional Forest Officer, and royalty paid upon all timber cut.

Q. There is a further point in connection with forest roads or railways: you are aware that forests are often worked in cycles, that is to say, timber is taken out from a forest for 10 years and then that forest is closed and timber is taken out from some other different area: have you considered the construction of forest roads with reference to this aspect of the matter?—*A.* As stated in my reply to a question by Sir Francis Stewart, I consider that Government should assist in the building of such roads as would serve the Companies exploiting the forests and be of service to the local population. The location of such roads could be better arrived at by close co-operation between Companies' engineers and engineers of the Public Works Department, for there is no doubt that in many cases forest roads that would be of equal or nearly equal benefit to the Companies could be diverted to a more suitable location from Government standpoint.

Mr. A. Chatterton.—*Q.* In regard to metallurgical matters do you want any assistance from the Government of India in the way of research institutions in places where you have got metallurgical problems to work out?—*A.* Such institutions would be of great advantage.

Q. In connection with these metals—lead and zinc—which you are mining here, is there scope for any local research work?—*A.* In an enterprise of this kind a research institute is indispensable. We have a small one now in operation, and contemplate the erection of a larger and more complete one in the near furture.

Q. Is there much prospecting going on in these hills?—*A.* In the Northern Shan States I think there is very little prospecting outside what is being done by this Company.

Q. Do they find minerals which require a metallurgical research institute to deal with?—*A.* The treatment of almost all minerals is a more simple matter after tests on them have been carried out in a research laboratory to determine the most suitable process. As regards analysis, we constantly receive samples from outsiders for assay.

Q. Have you any educated Indians or Chinese employed in the technical management of your concern?—*A.* We have three Chinese engineers—one a graduate of the Royal School of Mines, London, the other two graduates of the Montana School of Mines, United States. We have several technically trained Indians who are employed as draftsmen and surveyors, and another *en route* from England.

Q. What salaries do these men get?—*A.* The Chinese engineers started on Rs. 250 a month. The English trained man is now receiving Rs. 450. The Indians receive from Rs. 150 to Rs. 300.

Q. Who is the Indian coming out?—*A.* His name is N. S. Sandhu, a Punjabi Hindu, I understand he went to England seven or eight years ago, received some technical training and was in the employ of an English Railway Company.

Q. Is he a mining engineer?—*A.* He is a railway engineer. The three Chinese are mining engineers.

Q. Is it practicable to do anything here in the way of training men for this kind of mining work?—*A.* Do you mean giving them technical or practical training? We have a large number of well-trained men for practical work—men who are trained here—such as expert miners, smelter men, mill men, engine drivers, etc.

Q. Are they Chinese?—*A.* All the miners and mill men, and some of the smelter men are Maingthas.

Q. Are there any Indians employed on such work?—*A.* We have no Indians underground, but some of the men on technical work at the smelter are Indians and almost all our engine drivers.

Q. Have you got any Indians who have had some kind of engineering education?—*A.* We have a number of such men.

Q. Have they come from engineering colleges in India?—*A.* Yes.

Q. What are they doing here?—*A.* Some of them are draftsmen, some surveyors.

Q. Have they any general knowledge of mining work?—*A.* None, but one man who is draftsman at the mine.

Q. Is he a Bengali?—*A.* Yes.

Q. Is he from the Sibpur Engineering College?—*A.* Yes.

Q. Have you got any in the metallurgical section?—*A.* None with technical training. A number are holding positions as supervisors and are doing quite well.

Q. That sort of work does not require any metallurgical knowledge?—*A.* It requires a certain amount which is only obtained by experience.

Q. When they come to you, they do not possess any technical knowledge?—*A.* No.

Q. Would it be possible to take apprentices here and put them through a regular course of mining and metallurgical instruction?—*A.* Yes. A class has been receiving instruction in mechanical engineering at Bawdwin under the tutorship of our Mine Mechanical engineer.

Q. I would like you to tell us, if you would be so good, what is the general procedure in America by which men become managers and heads of mining concerns?—*A.* About 90 per cent. of American Mine Managers and heads of mining concerns are graduates of mining colleges, the remaining 10 per cent. are practical men who by study and perseverance have fitted themselves for promotion to the higher positions. The usual procedure by college men is that during the vacation between the first and second years at college the time is usually spent in surface and mine surveying; the vacation between the second and third years in mine surveying and actual mining, for instance, shovelling, tramming, drilling, timbering, etc.; the vacation between the third and fourth years is usually spent in getting more mining together with milling and smelting experience. After graduation, if a man intends following mining, he gets a position in a mine as a miner, receiving promotion on his merit. If he chooses any other branch, such as geology, metallurgy milling, assaying, etc., he seeks positions in those branches, working his way up as in mining.

Q. Have they to work as ordinary workmen?—*A.* Absolutely, they start at the bottom.

APPENDIX.

Extract from letter dated the 29th April 1918, from T. E. Mitchell, Esq., Resident Manager, Burma Mines, Limited, to the Secretary, Indian Industrial Commission.

* * * * * * *

With regard to the statistics requested by the Commission I beg to say that we have 42 Indians who have been educated in Anglo Vernacular Schools. These men are working in the following departments:—

Drafting Office	3	Machine Shop	7
Railway Department	4	Construction Department	5
Smelter	3	Carriage and Wagon Department	5
Blacksmith Shop	3	Boiler Shop	2
Mechanical Department	4	Loco Shop	1
Pattern Shop	4	Electrical Department	1

MANDALAY.

WITNESS No. 448.

MR. L. H. SAUNDERS, I.C.S., *Judicial Commissioner, Burma.*

WRITTEN EVIDENCE.

The Commission's questions appear to contemplate a much wider and more systematic assistance of and interference with commerce and industry than has been the case in the past. No indication is given of the principles by which the Commission or the Government of India will be guided, or how far preconceived ideas or the principles which have been acted on in the past have been or are to be abandoned. I am not in any way qualified to discuss or to offer an opinion on this important matter, but one's views in matters of detail are, or should be, guided to some extent by general principles, and it seems desirable therefore to preface one's answer with a statement of these as I understand them. Whatever opinion may be held of the value and virtues of private enterprise or an individualistic theory of society and Government, there can be no doubt that it has left a magnificent record in the seventeenth, eighteenth and at least the first half of the nineteenth century. We owe to it, mainly, if not entirely, not only our pre-eminence in industry and commerce but we also owe to it the British Empire beyond the seas. It is certainly desirable therefore that this system should not be lightly abandoned. Admitting that the results produced by it in the last fifty years or so have not been entirely satisfactory, admitting that enterprise in other countries, and especially in Germany whose organisation has come into especial prominence through the war, has produced results rivalling and even surpassing those of the British Empire, it does not follow that the system is suffering from incurable defects, or that one of those defects is the failure of the State to interfere directly in organisation and control.

It would not be difficult to enumerate some of the causes, social and political, which have hampered British industry in recent years in its competition with younger rivals. It is inconceivable that they will remain untouched by the war and its effects. If wise counsels prevail it seems to me that the war will be followed by a period of prosperity and enterprise at least equal to anything of the kind in the past. In that case public opinion in the United Kingdom will make it clear whether, where, and to what extent State aid and State interference are called for, and the Government of India, which is naturally influenced by and reflects to a great extent the opinion of the mother country, will not be left in much doubt as to the steps to be taken in India.

If, unfortunately, matters take a different course, it is impossible to conjecture what results may be, but it is at least probable that they may be disastrous, not only to the United Kingdom, but also to its great dependency.

I think, therefore, that it is very desirable to emphasize the fact that the work of the Commission is being undertaken, if not during a period of transition, at least at a time when principles are being called in question which a short time ago were almost universally accepted, and that it is impossible to prophecy what effect the war may have upon the conduct of industry and trade in the future. While, therefore, in common with every one who has been for any length of time in the country, instances where industrial or commercial opportunities have been neglected or misused have perhaps come to my notice, I should hesitate to recommend Government interference upon the general principle, which I believe to be still sound in relation to the British people, that private enterprise in matters of industry and commerce is most successful when least subject to state interference.

History and position of India.

The demands which have arisen in England for increased interference by the State in these matters, *e.g.*, for the State acquisition of railways and mines, and which have generally been put forward by labour or by theorists, I believe to be due to ignorance of the real problems in issue, which arise from a variety of causes of which the fear of unemployment, a failure to appreciate the nature and position of capital, lack of education, and of a due share by labour in responsibility in industry, are among the most important. These and the changes in the centre of gravity in political matters are probably the main causes which have operated to restrict the success and energetic development of private enterprise in recent years. If these causes continue to operate it appears to me that private enterprise will continue to be weakened, and, if industry and commerce are to continue and expand, the Government will either have to undertake the part of entrepreneurs, either directly or indirectly, to a very much greater extent than any one would at present think possible, or will have to trust more and more to foreign enterprise until such time as the native of the country is able to take a much larger part in business than he does at present.

I think these remarks are necessary because the history and position of the Government of India differ in important particulars from those of the Government of the United Kingdom. The Government of India has never taken the extreme individualist view which for long prevailed at home, but in its assumption of the control of land, of forests, etc., and in its construction of railways and canals and in other ways has recognised the principle that the function of Government extends beyond the maintenance of order. I think, therefore, that there is a greater danger in India than there is in England of the adoption of a theory favouring State interference in industry as a remedy for the comparative failure of private enterprise, and of the ignoring of the fact that, while State interference may be successful in Germany, for example, where it is in consonance with the spirit of the nation, it is not likely to be so successful in a country whose traditions are those of greater freedom. It is true that experience of State interference and State control is greater in India than in the United Kingdom, and that such experience does not promise the somewhat Utopian results which are sometimes apparently expected by theorists in England; but in a time of stress like the present the danger appears to be real and should be guarded against.

While it is clearly impossible to say at present what effect the present war will have on trade and industry, it has undoubtedly had already one very important effect in causing an examination of our methods and of the principles which governed them. It has undoubtedly brought into the light the political factor in economic problems. Admitting, for example, the economic soundness of free trade, the fact that such a vital industry as agriculture may be ruined by it is not only a political factor of the first importance, but it may react on industry in such a manner as to make even its economic soundness questionable. Similarly, while economic laws may encourage free intercourse between different bodies politic, it may be found that the political result of such freedom has proved disastrous to the economic welfare of one or more of them.

Applying the general principles referred to above, to concrete instances the rice trade of Burma may be taken as a good example.

Rice trade of Burma.

This important industry which consists in the collection of the unhusked rice from the cultivator, the removal of more or less of the husk, and the shipment and sale of the husked product, began in a very humble way by the collection of the husked rice from the cultivators in small parcels, and its shipment in bulk. By the private enterprise of British firms it developed into a great business, paddy being purchased in large quantities by brokers on behalf of the milling firms, and turned into all descriptions of rice, from the finest white rice shipped to South America for eating purposes, to the roughly milled grain used in manufactures. The partners or heads of firms who had built up this business in the country retired to England (or Scotland) with fortunes, but continued to keep the control of the business in their own hands. The same enterprise and acumen which had built up the business were not displayed in carrying it on. German firms appeared on the scene, and, though the condition of the big English firms may not have been as precarious as has been alleged at the time war broke out, there can be no doubt that the control of the industry had passed into German hands, prices were governed by the Hamburg market, the methods of the British firms were bad, and they were not able to retain the position which had been built up for them.

Now, I think, it is the case that the Government of India did nothing to assist the establishment of this great business, that the men who started it did not expect and possibly would have resented offers of assistance, and that, equally, when the industry failed to be as profitable as it had been or threatened to pass entirely into German hands, Government could not and would not have interfered.

Take again the wolfram industry of Tavoy. I do not know whether this valuable mineral was discovered and its existence made known by private enterprise or by the Government Geological Department. I believe that the deposits are rich, and that for years after the industry of recovering the wolfram began, no attempt was made to prove them, or to do more than a little random mining. Little or no capital was forthcoming for the enterprise, and little or no scientific skill was displayed in dealing with it. The ore was, I believe, all shipped to a foreign country, because the means to extract one of the most important ingredients in one of the most important industries of the north of England were entirely wanting in India or England. Is it expected that Government will have more enterprise than the firms engaged, for instance, in the manufacture of high speed tools, and will undertake to deal with wolfram ores? Wolfram.

Or take the case of the Bawdwin mines, one of the most important mineral deposits in the Indian Empire. There is, I believe, plenty of capital behind the company which is developing these mines, but so far, though the deposits have been known for nearly 30 years the enterprise is still in its infancy and the problem of dealing with more or less refractory ores of zinc, copper, etc., is still unsolved. I understand that American labour is replacing Australian and possibly the capital is American.

The labour at the oil fields is almost entirely American. Is Government prepared to develop the resources of this country by or for the benefit of foreign countries? The refusal to allow the Standard Oil Company of America to acquire rights in the oil field seems to show that a preference may be allowed to British firms but here there was an important British Company in existence. Where this is not the case is Government prepared to stifle an industry which foreign firms might be willing to develop in the absence of British competition? Oil.

It is obvious that the manner in which the questions of the Commission are answered must depend to some extent at least upon what the answerer thinks the policy of Government will be or ought to be after the war.

So far as I am concerned I will endeavour to answer them on the assumption that in India there will be no change.

There are two main divisions into which it appears to me that the problem falls. The first deals with all those activities with which the Government has directly concerned itself or for which it has made itself responsible in the past. These include the development of the forests, of minerals, of agriculture (outside the area of the permanent settlement), education (with certain reservations, *e.g.*, where there are private or unaided schools), communications and the like.

The second is concerned with all the trades and industries, and falls naturally into two classes, large and small.

As to the former it appears to me that the Government of India is in the position of the proprietor of a great estate who is, or should, be ready and anxious to develop it to the best advantage and for the benefit of the persons living in it.

Obviously the first thing to do is to ascertain as fully as possible its resources and possibilities. In certain directions if this test is applied good progress has been made, in other directions a beginning, in others hardly that.

As far as Burma is concerned it is, I think, generally admitted that the inadequacy of communications is one of the greatest stumbling blocks in the way of development. The difficulty of ascertaining what is to be found in any given area, to say nothing of making use of it, is obviously increased when it is only possible to get to that place with considerable difficulty, delay and discomfort. The necessity for roads is recognised and it is hoped, I believe, to make a beginning in laying them out. The absence of any systematic geological survey or examination of sources of stone metal is a good example of how things should not be done. A Chief Engineer who had been in the province a year professed complete ignorance of the local prices of stone metal, and astonishment at its high price and inferior quality, but no further curiosity on the subject. In one district in which I served in which stone metal had actually been collected and paid for, it was condemned and not put on the roads, because, although, at the price, it was decidedly superior to the burnt brick locally used, it was not good stone metal, which it was certainly not. In the same part of Burma the Commissioner of the division refused to entertain any complaint of the absence of roads in one district and the shocking condition of those which did exist, on the ground that in the dry weather carts could go across country, and in the rains the bullocks were required for ploughing. It is hardly surprising when views like this are allowed to exist that the country has remained undeveloped. It is unfortunate that the only railways in the country are metre gauge. Burma is a long country of no great breadth, if the Shan States are excluded, and the time occupied in travelling from one end of it to the other in trains proceeding at 12 to 20 miles an hour is a serious obstacle to development. Roads and railway communications.

The absence of hotels outside Rangoon and of dâk bungalows in which food can be supplied keeps away many visitors, of whom some at least, it may be presumed, would have

an eye to business. Officials are generally accustomed to travelling with their own servants, or have means of accommodating themselves not open to the general public. The Railway Company and the local Government would probably be well advised to improve these facilities for travel.

That the Southern Shan States should only have been connected with Burma proper by railway very recently, and that that railway should have ended where it does is an instance of the difficulty of opening up communications which might be repeated almost *ad nauseam*.

The history of communications in Tenasserim and Arakan—the two oldest divisions of the province annexed nearly 100 years ago—is enlightening, and I submit not creditable to those responsible. But it is, I think, unnecessary to enlarge upon this theme. Here as in other directions where money could have been profitably spent upon development there is no doubt that the country has suffered from lack of funds and there is probably no province in India which would have repaid expenditure more rapidly.

It is usual to condemn the Government of India inasmuch as the country provides most ample funds and if the surplus available were more largely devoted to local development, there would be plenty of money for the purpose. Burma is, I believe, by far the most heavily taxed province of the Indian Empire per head of population.

It seems to me that there are faults on both sides. I was informed not many years ago that the view prevailing in the India Office was that Burma produced a surplus revenue which she could not profitably spend. I believe at the time of the Annexation of Upper Burma the Government of India were prepared to give whatever sums were asked for for development. Fifteen years later it was notorious that balances were accumulated and that they were not spent because it was said that establishments were inadequate. But, on the other hand, it would appear that if the Government of India had been acquainted with the conditions of the province there would or should have been, not merely a readiness to assist in its development, but an insistence upon proper measures being taken for the purpose. It is clear that in the last 20 or 30 years very large sums of money have been invested by the United Kingdom not merely in the Colonies but in foreign countries, and if money has not been available for the development of an admittedly rich province of the Indian Empire the cause was presumably ascertainable and removable.

Forests. Among the most valuable assets of the Indian Empire, the control of which has been retained by the Government, are the forests. It would appear that the Forest Service has been recruited until recent years almost exclusively with a view to the extraction or supervision of the extraction of timber. Burma, which I believe, provides about half the forest revenue of India finds over 90 per cent. of this from the extraction of teak. The forests are of course generally inaccessible by road or rail and the department would appear to have been generally starved. A percentage of appointments might be given to botanists, chemists and other specialists with a view to the application of those sciences in the work of the department, the technical side of the industry being attended to not only in the field but in the institutes of which Burma ought certainly to have not the least important, and which might be co-ordinated under an Imperial or Central Institute. Such questions as the extraction of commercial products, turpentines, etc., as well as the strength and adaptability of timbers require attention.

Geological and mineralogical surveys. It does not seem necessary to go in detail into the development of other departments. It would seem desirable to have a geological and mineralogical survey of each province in some detail and for this purpose each province should apparently have its own staff working under or in connection with the Government of India staff. Experts in fact are required in much larger numbers than are available in India at present. In my opinion they should be controlled by non-experts but should receive adequate, that is, substantial emoluments.

Scientific education. One of the reasons why the United Kingdom has not made the progress in industrial matters which might have been expected would appear to be that the people generally have failed to realise the importance of what are known as scientific attainments as compared with merely general knowledge or mechanical skill. Education has apparently been too much in the hands of persons trained only by a literary education and while, I think, it has been found that what is called a classical education is the best foundation for any form of specialization, and the lack of it is possibly at least as much responsible for the failure of the scientists to convince the country of the importance of scientific specialization, both in education and industry, it seems clear that here, as elsewhere, the Government of India has merely reflected home methods. But while in England private benefactors and public opinion have largely shaped the course of education, in India it appears to have followed the usual bureaucratic methods with the passing of examinations and clerical employment as the two most important objects to be aimed at.

Agriculture. In agriculture the Government has done excellent work in certain directions, *e.g.*, in the development of irrigation and of co-operative societies, which in Burma are mainly agricultural and owe whatever success they have achieved in the first instance and very largely to Government initiative. These societies appear to me to offer one of the most promising guarantees for the future successful development and progress of the country, and the absence of co-operative effort in England except in the direction of buying and selling is a sign of weakness in the national life.

The Agricultural Department in Burma is young but promising. It requires funds for its development and appears to be working on right lines.

As to important industries I do not think I have any useful suggestions to offer. 'The will to succeed,' as the Germans would say, would probably remove most of the difficulties they encounter. Provincial Governments should have expert knowledge and advice at their disposal and there should be close intercourse between Provincial and Imperial Departments. It is no doubt desirable that Provincial Governments should be subordinate to the Imperial Government but I think it has been the case in the past that the local Government of Burma has adopted the attitude of expecting criticism and rebuke from the Government of India rather than sympathy and advice. No doubt that is not now the case but it is not easy to understand how a Government whose members spend part of the year in Simla and the rest at Delhi and upon which Burma has no effective representation can expect to have the knowledge of local requirements from which effective help alone can arise.

Mining Rules.

The Mining Rules in the past appear to have contemplated a state of development which does not always exist in parts of the country where minerals are frequently found. Fairly accurate maps and demarcation are, for instance, called for from people undertaking work. In Tavoy in order to facilitate compliance with the rules with reference to wolfram, I understand that a detailed survey was prepared by the advice of the Survey Department upon a scale which proved quite unsuitable and the money spent on the survey was to a great extent wasted. A visit by a qualified expert of 2 or 3 months duration should have put the Governments of Burma and India in possession of the facts and have been sufficient to safeguard the interests of the State.

Similar expert advice would be most useful in many directions. I understand that the Government of Burma proposed to send an Indian Civilian to the Straits for six months to acquire a knowledge of the tin mining industry with a view to advising them on his return. Such a deputation and a similar deputation of officers to enquire into the rubber industry, into the state of communications, etc., would probably have been most useful if the Government had also had at its disposal scientific experts qualified to advise in matters of detail.

Small industries.

With reference to small industries I think there is a wide field open to Government. There are numerous handicrafts and village industries in Burma, some of which are extensively carried on, and serve or used to serve, the needs of the people throughout the province, while others are more local in character. Such are weaving, pottery, slipper making, umbrella making, lacquer ware, jaggery boiling, and a number of others. Many of these are efficient in their own way, but they are carried on in ignorance of what western knowledge has achieved and many of them are threatened with extinction by competition with articles of western or Japanese manufacture. It seems desirable that, wherever it can be done, the craftsmen should be put in the way of learning such western methods and improvements as may be of assistance to them. They are all village industries and though some, if not all, are capable of concentration in large factories, it is in the direction of maintaining their present character that I think Government help should be given. The question of markets cannot be lost sight of—as the ordinary villager is not capable of advertising his wares by modern methods, of accumulating stocks or developing new markets, Government assistance is probably necessary for these purposes. Here co-operative societies offer a means of development which may be of the greatest value.

Weaving handloom.

I have had some experience of handloom weaving. This industry was, before we annexed the country, practically universal, the clothes worn by the people being entirely locally woven. The industry, except in a few centres, has almost died out in Lower Burma and is threatened with extinction in Upper Burma owing to the competition of foreign goods, mainly from Manchester and Japan. The former exports very large quantities of cotton fabrics for coats, etc., and printed cottons for *longyis* or waist cloths. Japan exports large quantities of light and flimsy but attractive silk goods especially for turbans. But the Burmese cotton and silk fabrics, though rough and comparatively dear, are not as a rule adulterated in any way, and are extremely durable. I have read lately articles on silk weaving in an "Indian Trade Journal" in which methods of loading silk fabrics are described, and the silk industry in England and Japan seems to consist largely of putting goods upon the market with the minimum of silk and the maximum of adulteration.

It appeared to me desirable that the weavers of Burma should have some instructions in western methods since their looms though extremely serviceable in some ways were old fashioned and often roughly made and the weavers' knowledge, *e.g.*, of pattern weaving and of weaving wide widths, was extremely limited. I aimed only at improving mechanical methods though it was obvious that if success was obtained in this direction other questions would arise.

About 1907, when Deputy Commissioner of Shwebo, I bought a fly shuttle loom and showed it to the weavers of whom there were two large colonies, but the loom which came from Calcutta was not a very good specimen and the weavers themselves took little interest in it. The weaver at that time usually worked for a contractor who by supplying the silk on credit and buying the finished product managed to keep his workpeople in a state of bondage and neither he nor they saw any advantage in new methods. When I left the district I gave the loom to the S. P. G. Mission school which purported to teach weaving and was described by the Education Department as a technical school on this account (the only one of its kind), though nothing was taught but indigenous methods and the teacher had never heard of a fly shuttle. In 1909, when Deputy Commissioner, Henzada, I got a much better fly shuttle loom from the Director of Industries, Madras, and got a local weaver to teach himself the use

of it and gave it to him when I left. This man subsequently became a pupil of the Amarapura school.

When on leave in England, I got an English handloom without fly shuttle and had the warp set up by an English weaver. I brought this to Mandalay in 1911 and got another fly shuttle loom from Madras of the same kind as I had obtained in Henzada. Amarapura, near Mandalay, is the largest weaving centre in the province, silk cloths being woven there in considerable quantities. A co-operative society had been recently formed there, mainly with the object of improving the weavers' financial position. In this it had attained some success, and when I sent for the Chairman to show him these looms he at once had them taken down and removed to Amarapura, and, without any further help or advice, ordered the wood and iron work for six more looms from local sources. The local weavers were, however, unable to obtain locally such parts as pickers, reeds, healds, etc., and I had to get these for them from Bombay. The Chairman and members showed a good deal of enterprise in copying and learning to work the looms, but the English warp was too fine for the local weavers. Hearing that there was to be a weaving competition in Rangoon I advised them to send a man there to see if he could pick up any hints. He noticed the Salvation Army picking attachment and on his return copied it. This proved popular and the interest taken in the looms increased considerably. As I knew nothing about the technical part of weaving and demands for explanations, assistance, etc., threatened to increase it was proposed to obtain the services of a qualified man. The weaver whom I saw at home told me he had been offered Rs. 300 a month, I think, by the Government of India to come out to India for a year to give instructions in weaving, and that he had declined the offer, partly because it would not pay him to leave his business on these terms for a year, and partly because Government apparently expected some knowledge of spinning and dyeing which he did not possess. This gives some idea of the requirements and limitations of working class instructors from England. It was decided to endeavour to get a suitable instructor from India and the services of Mr. Husst from Saharanpur were obtained. The local Government has displayed considerable interest in the work and has provided, I believe, all the funds asked for. It has been necessary to start work from the beginning, to build a weaving shed and store, to lay in a supply of silk, to purchase looms, etc. Pupils receive scholarships from the Education Department or from Local Funds where necessary, and they can buy looms when they have learnt to use them, on the instalment system. The more intelligent pupils who wish to do so are taught designing and go through a course which will enable them to instruct others. Iron Hattersley looms have been obtained, and when I left Burma a Jacquard was on order but there was a difficulty in obtaining delivery owing to the war.

It is unfortunate that the attempt to help this industry has synchronised with the war and while the price of raw silk which is imported from China has become almost prohibitive the demand for silk goods has decreased. In the circumstances attention has been given to cotton fabrics for which there is a good demand in the province, and, if the industry survives, there should, I think, be a good future before it. Co-operation has given the weavers a brighter outlook and an incentive to work in improving their financial position, and it also makes it possible for them to spend more money on their implements.

Dyes.

But to put the industry on a thoroughly sound basis, I think that a good deal remains to be done. At one time the dyes in use were all locally procurable and largely vegetable dyes. Practically all, except the yellow used for *pongyi* robes, have been displaced by chemical dyes. It would seem desirable to have an examination of the vegetable dyes made by a botanist and a chemist with a view to ascertaining whether it is worth reviving them. The methods of dyeing with chemical dyes are easy and the results for the trouble spent on them are good, but an expert in dyes could give much help though it would be necessary to discriminate between dyeing and the other processes common in England; which aim at producing an attractive and sellable rather than a durable article. Raw silk from Kashmir deserves more attention as an alternative to the Chinese article and it is possible that in time the country may be able to produce its own raw silk, but under present conditions this can only be done effectively if Government is prepared to undertake the supervision and financing of the work. I believe that Mr. Lefroy was anxious to ascertain whether the production of a suitable silk was possible in Burma and was prepared if it was found to be so, and if the Government of India was prepared to undertake the supervision of silk production throughout the Empire, to recommend the adoption of measures of investigation on a fairly large scale.

-ilk.

Sales Agency.

For the marketing of these and other village industries some agency appears necessary. If a co-operative society or a collection of societies interested in village industries would undertake to set up a central sale depôt it is probable that this would be found a profitable step.

It appears to me that measures similar to those adopted in the case of weaving could be and should be adopted for other village industries. A scheme was drawn up at the time of His Excellency the Viceroy's visit to Mandalay for the institution of a technical school in Mandalay, which in the first instance should give instruction in masonry, pottery, carpentering, and tanning, and the existing weaving school could probably be added to it with advantage. The initial cost was estimated, I think, at 2 lakhs and the annual expenditure was estimated at (?)50,000. If such a school were in existence it would form a nucleus to which could be added other subjects, or, as it would be admittedly experimental, unsuitable subjects would be dropped.

Technical school.

I am strongly of opinion that there should be in this province a Director of Industries who should probably be a civilian, though the choice would require some care. What is required is common sense and a practical turn of mind. The expert whether in business or anything else is generally an expert because he has devoted himself to one subject to the exclusion of others, "the noise of the hammer and of the anvil is ever in his ears and his eyes look still upon the pattern of the thing he maketh." Except in exceptional cases therefore he is not likely to make a good director of other experts. Director of Industries.

I think also that there should be a Board of Industries, which should have executive powers with budgetted funds and a free hand, subject to control as to the general lines upon which it should work and the objects to be aimed at. The Board should consist probably of such Government officers as members of the agricultural staff, the head of the engineering school, Insein, representatives of any other industries in which Government decides to display an interest and probably representatives of large industries selected, *e.g.*, by the Chamber of Commerce and Burma Railways. Board of Industries.

It would certainly seem desirable to correlate the activities of the various provinces by bringing them within the scope of an Imperial head, *e.g.*, the Member for Commerce, who might be assisted by a Board of Trade; but the position of Burma undoubtedly would make it difficult for such a department to keep in touch with Burma's requirements and it would probably be to the economic advantage of Burma to obtain complete independence from India in return for a substantial contribution in money, of course not as great as its present contribution. Correlation of Provincial Departments.

ORAL EVIDENCE, 31ST JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* You have got no experience in connection with the development of industries since you arrived in this country ?—*A.* Nothing except silk weaving in a small way.

Q. In the first paragraph of your written statement you say, "The Commission's questions appear to contemplate a much wider and more systematic assistance of and interference with commerce and industry than has been the case in the past." I think you have misunderstood the intention of Government in appointing this Commission. It is not to interfere with any existing industry.—*A.* Well.

Q. Then you say, "The Government of India which is naturally influenced by and reflects to a great extent the opinion of the mother country ..." It does not necessarily follow, because India is quite different from England as far as industrial development is concerned ?—*A.* Yes, possibly.

Q. The object of this Commission, as far as I know, is principally to encourage Indians to develop industries.—*A.* I have not seen the terms of reference to the Commission.

Q. And these questions have been framed accordingly. I may tell you that its object is not in any way to interfere with or cry down British enterprise which has done so much good.—*A.* I do not imagine that was the object. After all, assistance is interference, I imagine.

Q. Will you explain a little more clearly how you take it as an interference if the Government assist the development of industries here ?—*A.* It is a beneficent interference I should say.

Q. But don't you think that it is the duty of every Government to try and develop the industries of the country ?—*A.* Well, it depends—It is a large question.

Q. You are in favour of appointing a Director of Industries ?—*A.* Yes.

Q. And also a Board ?—*A.* Yes.

Q. But that is also helping to develop industry.—*A.* I say that they are perhaps to some extent open questions. I do not say that Government should not do it. I say that in the past Government—I think that is the sense of what I have written—have abstained from interference and the development of industries has been considerable in certain directions and it is a question how far Government should interfere by assistance. I do not mean to restrict industries at all. The whole thing is in the melting pot at present. That is the object of the first paragraph of my note.

Q. What is your reason for saying that it is in the melting pot ?—*A.* The war is affecting every thing. The effect of the war has been felt considerably in India and Government has already taken steps, which they would not have taken before, by the appointment of the Munitions Board and so on for the development of industries, but I do not think it is quite clear because this Commission has been appointed that steps should be taken in the future.

Q. The Munitions Board was appointed after this Commission had been appointed and had done half of its work and the Board is only an off-shoot or rather an adjunct of this Commission.—*A.* Is it so ?

Q. In your own opinion do you think that this Commission and the trouble that it has taken are not wanted at all ?—*A.* No. I do not think so at all.

Q. Do you think, what the Government of India has done hitherto for the development of industries is quite enough ?—*A.* I do not think so. I do not think that is the meaning of my evidence.

Q. We read it in that light.—*A.* That is not my intention. There is no doubt that industries in India have followed the lines of English industries very largely in the past. They have been left to the public without Government interference but I point out that in certain respects Government has not followed the same lines in the development of forests, railways and so on. I point out also that the question of how far Government should interfere is a matter which I think depends to a certain extent on the decision of statesmen at home.

Mr. C. E. Low.—*Q.* You say on the first page of your written statement, "I should hesitate to recommend Government interference upon the general principle which I believe to be still sound in relation to the British people that private enterprise in matters of industry and commerce is most successful when least subject to State interference." Assuming that this principle is sound in relation to British people under the present conditions, do you consider that that necessarily follows with regard to the Indian population ?—*A.* No. I do not think so.

Q. Under the head of wolfram, you say, "Is it expected that Government will have more enterprise than the firms engaged, for instance, in the manufacture of high speed tools and will undertake to deal with wolfram ores ?" Might it not be a question of something more than enterprise ? Would not India be in a dangerous position in the event of a future war if it could not produce its own high speed tools and might it not be arguable that Government should undertake the manufacture of high speed tools even at some loss which no private firm would naturally contemplate ?—*A.* Yes.

Q. You say, "The problem of dealing with more or less refractory ores of zinc, copper, etc., is still unsolved." Do you mean that they do not know how to do it or they have not done it ?—*A.* I believe they do not know how to do it.

Q. From what we understood from our conversation, with the Burma Mines' people the reason why they have not done it is simply because of the existing position they could not do it.—*A.* There is no doubt that they could do it in time, but I know nothing about it myself. I have talked with mining engineers and I understand that there are problems peculiar to every mine and the problems in connection with this particular mine have not been solved.

Q. Not in practice, but perhaps on a fairly large experimental basis ?—*A.* That I do not know.

Q. Then you say, "These include the development of the forests, of minerals, of agriculture (outside the area of the permanent settlement)." Why do you think that the development of agriculture should be confined to the temporarily settled areas ?—*A.* I do not think I say so. I say that Government has concerned itself in the past in these things.

Q. But has not Government concerned itself for some years past in the development of agriculture in Bengal ?—*A.* In the permanently settled areas? Possibly it has.

Q. Speaking quite generally, do you think that it is a good thing for a country like India for her population to be so essentially unindustrial ?—*A.* I certainly do not.

Q. Is it not unsafe ?—*A.* I think so. Indeed very unsafe.

Q. In the same page you say, "That the Shan States should only have etc. ?—*A.* It should be Southern Shan States. It is a misprint.

Q. As a matter of fact where was the Railway supposed to go along to ?—*A.* The Nyaungywe valley.

Q. Then you say, "The absence of hotels . . . kept away many visitors, . . . The Railway Company and the Local Government would probably be well advised to improve these facilities for travel." You think that the Railway Company might put up, as, for instance, the Bengal Nagpur Railway have done, railway rest houses open to the public ?—*A.* Yes. But not merely rest houses : hotels also.

Q. Something of that sort you think would help ?—*A* Yes.

Q. Under the heading of Mining Rules, you say, "In Tavoy in order to facilitate compliance with the rules with reference to wolfram, I understand that a detailed survey was prepared by the advice of the Survey Department upon a scale which proved quite unsuitable and the money spent on the survey was to a great extent wasted." What was the scale that was used ?—*A.* What did happen here was that the survey was made on one inch scale and that is not altogether suited to mining.

Q. The point of my question is this. You say, "A visit by a qualified expert of two or three months duration should have put the Governments of Burma and India in possession of the facts and have been sufficient to safeguard the interests of the State." But Mr. Coggin Brown of the Geological Survey was out here for some time and some other members also. Was that before the Government of Burma agreed to this scale, or was it perhaps the case that the survey was made on this scale because time and circumstances did not permit of anything more detailed ?—*A.* I am afraid I cannot tell you.

Hon'ble Mr. H. Thompson.—The survey was made without special reference to mining. It made no special reference to mining.

Q. You say, "I understand that the Government of Burma proposed to send an Indian Civilian to the Straits for six months to acquire a knowledge of the tin mining industry with a view to advising them on his return." A Civilian would have a good deal to learn if he wanted to acquire a knowledge of the tin mining industry ?—*A.* Yes.

Q. Was it with reference to the rules under which tin mining industry works there or the technical aspect?—*A.* As regards the rules.

Sir F. H. Stewart.—*Q.* Has he been sent?—*A.* No.

Mr. C. E. Low.—*Q.* Under the head of technical schools, you say, "A scheme was drawn up at the time of His Excellency the Viceroy's visit to Mandalay for the institution of a technical school in Mandalay, which in the first instance would give instruction in masonry, pottery, carpentering and tanning." Do you know of any steps being taken in that direction?—*A.* No. Nothing whatever I believe.

Q. Do you know the reason at all?—*A.* Because His Excellency told me that he should wait for the report of the Commission.

Q. In the next paragraph you point out that the expert is apt to be one-sided. But there are a good many experts in different things and you can pick your expert in such a way as to get a man who would not necessarily be one-sided?—*A.* No doubt, that is so, but what I meant to convey was that the tendency in acquiring expert knowledge was to restrict.

Q. Apart from the question as to where you draw your first Director from for the Department of Industries, is it not likely that the Department will evolve its own Directors in the future?—*A.* I think that will depend very largely on the constitution of the Department.

Q. You speak of the Board of Industries. Do you think that it is desirable that you should have Government officials who are heads of Departments on the Board? I put it to you this way. The Industrial Department can always obtain the advice of Government officers in other departments fully and freely without making an undue demand upon their time, whereas they cannot get in that way the advice of practical business men with a knowledge of local and industrial conditions. Would it not be preferable to have a Board consisting of business men and to obtain the assistance of departmental officers in the ordinary way? You know how difficult it is to get them together, to bring them from tour and so on? Could not the same amount of assistance be got from them with less trouble to themselves and to others by consulting them departmentally?—*A.* I am afraid I am not very favourably impressed by the process of departmental consultation.

Q. It is very often done quite privately and informally?—*A.* That is so. But when it takes the form of notes sent to office it is a most unbusinesslike way of doing things.

Q. If you have a Board of Industries consisting of private individuals with industrial experience, they discuss a certain proposition and they want more data or the Director wants more advice on a technical point outside, he goes to the head of the other department and talks it over?—*A.* No doubt, but I do not see why the head of that Department should not be also on the Board and discuss it before everybody.

Q. It is rather difficult to get them together at the meetings of the Board and it will make it more difficult if you have a number of departmental officers?—*A.* I do not think that it is necessary to have all these departmental officers together on every occasion, but they may attend only such meetings as relate to matters affecting them.

Sir F. H. Stewart.—*Q.* With reference to the first two or three pages of your note, would you not say that the position of affairs out here is very different from that at home, owing to the fact that the Indian industrial development has not been so great?—*A.* Yes.

Q. And therefore the case here is different from outside as regards Government help or intervention?—*A.* I think it certainly is in the case of small industries.

Q. That is the next question I was going to ask you In the first instance, do you think that the development of industries throughout India and perhaps especially in Burma has been commensurate with the possibilities?—*A.* No. Up to about 50 years ago I should say we had done very well.

Q. But of late, afterwards there has been no corresponding advance?—*A.* No.

Q. Is it your idea that Government help and encouragement could be more usefully confined to smaller industries?—*A.* Not necessarily confined. I think that smaller industries should have the first call.

Q. Would you not agree that the appointment of this Commission which was contemplated I think a good many years before the war, proves that Government is taking an increased interest in industrial development?—*A.* Yes.

Q. So far as you are concerned, you have answered the Commission's questions on the assumption that in India there will be no change?—*A.* Yes.

Q. But surely that change is already taking place and here is one instance of the appointment of this Commission?—*A.* Yes I have tried to make clear that in certain directions Government did interfere to assist or undertake the development of industries to a very much larger extent than in England.

Q. It seems to me that your written statement does not quite tally with the ideas you now express?—*A.* Perhaps the distinction is between small and large industries.

Q. You would agree that Government should give all possible help in the way of surveys and information?—*A.* Yes.

Q. And facilities for acquiring land?—*A.* Yes.

Q. Do you think that Government should go further and give direct financial aid?—*A.* In small industries.

Q. Have you any suggestions to make on the subject of communications, road communications particularly? Is there any possibility of co-operation, say, between Government and private enterprise? A suggestion was made to us elsewhere in Burma that, for instance, the lessees of forests might be willing to share in the expenditure of making certain roads which would open up the country for the public good?—*A.* Perhaps; I think a little may be done. Villages in Burma are required to keep open communications, but that in a sense is private work. But the main communications are insufficient in Burma.

Q. You attribute all that to lack of funds?—*A.* Yes.

Q. If you are given a freer hand with more funds you would have done more?—*A.* Yes.

Q. With reference to forests would you agree—I think that was the trend of your evidence—that you require silviculturists, research officers, working plans officers, commercial officers, revenue collectors and forest engineers?—*A.* Is that meant to be a complete list? Chemists also.

Q. Do you think that the circumstances of Burma are so individual and so special that a Forest research institute is required for Burma?—*A.* I think it is special in this way that forests are a very much more valuable possession in Burma than the rest of India.

Q. Would you agree that the Forest Department is very weak on the commercial side in dealing with matters of business?—*A.* Yes.

Q. How do you think that it should be remedied? By giving certain selected forest officers some business training, or by recruiting business men to run that side of the work?—*A.* I am afraid I am hardly prepared to go into details.

Q. With reference to cotton and silk fabrics, you say that they are not adulterated as a rule in any way. Is that still true?—*A.* I think so.

Q. Is the quality maintained?—*A.* I think so. I am speaking about the silk woven here. There is some adulteration but it is not very great. Cotton and silk are mixed but that is not adulteration.

Q. You think that the Board of Industries should have executive powers. You also think that the Director of Industries should be a Civilian. Would you give your Board control over the Director?—*A.* Yes.

Q. And in case of disagreement between the Director and the Board it would be a matter for reference to the Local Government?—*A.* Yes.

Q. What sort of status do you think the Director should have? Would he hold the position of a Secretary to Government with direct access to the head of the Government?—*A.* Certainly, yes.

Q. You want it to be really an important appointment?—*A.* Yes.

Q. With reference to the proposed Imperial Department, you think that the various activities of the different provinces should be correlated under the Member for Commerce?—*A.* I say, "*e.g.*, under the Member for Commerce."

Q. Do you think that the Department of Commerce would be able to devote the necessarily increasing time and attention to industrial matters?—*A.* I am afraid I am not competent to answer that question. I should think it should be extended.

Q. What I wanted to know was whether your answer contemplates the formation of a separate Industrial Department under the Government of India?—*A.* I am afraid I could not answer off-hand. It is a matter requiring some consideration.

Mr. A. Chatterton.—*Q.* I should like to ask you about the results achieved at the Amarapura Weaving School. Are you still in touch with this school?—*A.* Occasionally.

Q. What is the present position of the school in relation to the weavers in the neighbourhood? Is it exercising any considerable amount of influence over them?—*A.* Yes. The unfortunate part, of course, about the school is that it is beginning to feel the effect of the war as it has seriously affected the silk market.

Q. You mean that the price of silk has risen so much that there is less demand for it?—*A.* Yes.

Q. Are there many silk weavers in this neighbourhood?—*A.* Yes. It is the principal silk weaving centre of Burma.

Q. In your written statement you say that for the development of the smaller industries amongst which we may include handloom weaving "Co-operative societies offer a means of development which may be of the greatest value." Has anything been done in that direction as an off-shoot of the Weaving Institute?—*A.* It is rather the other way round. It is because there were existing co-operative societies in Amarapura that the school was started.

Q. Some one outside, yourself for instance, must have mentioned the matter and started the thing? Did the working brains come from the societies themselves?—*A.* From the societies. I got a loom.

Q. You initiated it?—*A.* I got it and put it up in my bungalow and the president of the societies in Amarapura came up with some of the weavers to see it. I had to go away for a few minutes and when I came back I found it had been taken away to Amarapura.

Q. Who is the president? A Burman?—*A.* Yes.

Q. In connection with the appointment of a Director of Industries you would preferably have a Civilian as Director. In connection with these experiments of your own in the improvement of the weaving industry do you think that it would have been very much easier for you if you had had a good deal more technical knowledge than you would probably have had at the beginning?—*A.* I do not know if it would be easier. When I persuaded Government that the services of an expert were required they fell in with the idea at once and obtained an expert. I do not think that a Director of Industries with a knowledge of weaving such as he possessed would have done much better.

Q. What is wanted in most industrial work is a knowledge of mechanical engineering? That comes in largely in almost every industrial problem?—*A.* Yes.

Q. With such a knowledge it is possible for a man to take up any specialised industry and more rapidly get a grip of it. Don't you think that it would be better to have a Director of Industries who is more or less qualified in that way rather than a man who has merely administrative ability?—*A.* I do not think it is necessary.

Q. For instance, in dealing with weaving problems the mechanism of weaving appliances is a matter of importance and a trained mechanician is more likely to be able to ascertain what is best to use rather than a man who has not that experience and knowledge?—*A.* I doubt very much whether you wish the Director of Industries to go round and put looms right.

Q. Not to put them right, but to start the thing. You might want to purchase these Hattersley looms for the Institute. A knowledge of mechanism in that case would be a matter of considerable help. You do not wish to be entirely in the hands of your expert who may be prejudiced in favour of one particular type of machine?—*A.* Of course, the same applies to everything. With a little knowledge of medicine it would be easier to decide whether your expert doctor's advice is good.

Hon'ble Mr. H. Thompson.—*Q.* I should like to put one question in connection with the general aspect of Government assistance or interference in industrial concerns. As you may be aware, a Provincial Committee has been appointed by Government to frame proposals to be placed before the Commission. This Committee proposed to make a clear distinction between large industries and small industries, and in the case of large industries the Committee suggests that Government interference should ordinarily be restricted to pioneer work, to experiments in new branches of industries, whereas in the small or cottage industries Government is required to go further and it may be necessary if possible to finance and also to instruct the persons employed in these small industries. Would you look at that as a suitable classification or division?—*A.* Cottage industries are not new industries. You say that you would restrict to new industries—

Q. I did not mention new industries. I said that as regards large industries help should generally be restricted to pioneering, in the case of cottage industries you should go further and it may be necessary that Government should both assist and finance and give technical instruction?—*A.* Pioneer work is not a large industry. It may be developed into a large industry.

Q. By "pioneer" work I use it in the sense in which it is used in the Commission's questions; that is to say, pioneering an industry is experimenting to see whether a new large industry will or will not be commercially successful?—*A.* If a pioneer industry is successful, one hopes it will lead to a large industry.

Mr. C. E. Low.—I would emphasise the words "commercially successful."

Hon'ble Mr. H. Thompson.—*Q.* Take for instance the Mergui rubber plantations. That is a good example of Government pioneer industry. Do you think that would be the general lines on which you would be inclined to recommend that Government should proceed?—*A.* I should think so.

Mr. C. E. Low.—*Q.* As regards this Amarapura Institute, did you find yourself in the position of not knowing where to go to for advice as to the right type of loom for the purposes you have in mind?—*A.* Yes.

Q. You had no one to ask anywhere in India?—*A.* I think the Director of Industries, Madras, was the person to whom I applied.

Q. Don't you think that some form of co-ordination of that sort is wanted to make the information in one province useful to another?—*A.* Exactly. If there were Directors of Industries and Boards of Industries there would be co-ordination.

Q. If you have a small industry run successfully in one province, unless the Director of the province where the information is wanted follows the reports in every other province he may not know where the industry is going on?—*A.* How would you propose to inform him.

Q. By having a Central Department, a Government of India Department?—*A.* But then they would distribute these reports?

Q. There would be a certain amount of touring and discussion, just as is done in the Agricultural Department. Speaking as an ex-Director of Agriculture I may say that I have obtained considerable assistance from the interviews that I had with the Agricultural Adviser

and the Pusa experts, and they were able to tell me what was happening in other provinces?—*A.* I should think that would be useful.

Sir F. H. Stewart.—*Q.* Is not the proportion of literacy very high among Burmese?—*A.* Yes.

Q. Does that make the Burmese responsive to new ideas?—*A.* Yes. Mr. Hurst will tell you that he found the Burmans more intelligent and more receptive than the Indians.

Q. They have done very little in the way of industries so far?—*A.* Yes.

Q. What is the explanation of that?—*A.* The extent of education is greater than the degree. To be able to read and write is not quite the same thing as having a good education.

Q. But what they have would render the people more responsive to the initiative and influence of Government?—*A.* I should say so. There is very great scope in Burma for development.

Hon'ble Sir R. N. Mookerjee.—*Q.* What made you to take so much interest in weaving at Amarapura?—*A.* Well, in the first instance, it was a fact that at one time—in the Burmese times—throughout the country the clothes that everybody wore were home made, but in Lower Burma weaving practically died out and there was hardly any weaving except in a few well known centres. In Upper Burma it was the same thing and when we annexed Upper Burma later the industry was in the same condition and I thought that the people should have a chance of learning better methods and be given an opportunity of competing with outside fabrics.

Q. What was the first step taken by you to give it a start?—*A.* First of all, I had to learn weaving. I think I have explained the whole thing in my statement.

Sir F. H. Stewart.—*Q.* Do Burmans of good families and position weave? In Assam we were told that ladies of respectable positions weave still?—*A.* It is dying out. I think they used to certainly. There is no caste in Burma. There is not very much distinction between families.

Mr. A. Chatterton.—*Q.* Are there any other domestic industries except weaving in Burma?—*A.* There are a great many.

Q. Purely domestic household industries, not carried on in the bazaar?—*A.* In the dry zone of Burma crops are precarious and the people have always a subsidiary industry such as mat making, pot making, or sugar boiling.

Q. How do they get a market for these things?—*A.* Either the middlemen come and buy or they themselves take them to the market.

Q. Is there any export trade from the dry zone to other parts of Burma in the products of these home industries?—*A.* Yes.

Q. It is organised?—*A.* No.

Q. If there is a middleman it would be to some extent organised?—*A.* Yes. There is no organisation.

Q. Is pottery one of these home industries?—*A.* Yes. I should say so.

Sir F. H. Stewart.—*Q.* Is it your idea that silk weaving should be developed or revived on the cottage system or the small factory system?—*A.* Cottage system I think. Of course, the war has greatly interfered with its development, and the difficulty now is to find a market; that is one question which will have to be settled at first.

Q. I was really wondering. Mr. Hurst says that there is sufficient reason to believe that a sufficient number of factories could be maintained in full time employment. The Institute is really for the purposes of instruction?—*A.* Yes.

Witness No. 449.

Mr. A. Hurst.

Mr. A. Hurst, *Principal, Saunders Silk Weaving Institute, Amarapura.*

Written Evidence.

1.—Financial Aid to Industrial Enterprises.

Capital.

Q. 1.—So far, I have had no experience in raising capital for industrial enterprises, and therefore, I am not in a position to say anything regarding the difficulties that one would have to contend with in doing so.

Q. 2.—But as far as my knowledge goes, capital can be raised from the following sources:—

(1) Individuals.
(2) Shares.
(3) Co-operative Credit Societies.
(4) Government.

Q. 3.—As far as this province is concerned no factories or any kind of industrial enterprises in silk have been started, and hence their full time employment is out of question. But there is sufficient reason to believe that, should a number of factories be started, all can be maintained in full time employment, as the consumption and demand of the province is far more than what is and can be manufactured.

Q. 5.—(1) Grants-in-aid should be given by Government to factory owners, in order to enable them to undertake the training of deserving students, who when trained will be available for employment in furthering and extending the business of their particular industries. Government assistance.

(2) Bounties and subsidies in the shape of land free, or free of rent for certain periods, and similar concessions should be given by the Government to new enterprises.

(3) Government should guarantee dividends for five or more years according to the conditions prevailing in the province, so as to create faith in the shareholders of the concern. The dividends may be realised after the concern is well established.

(4) Loans for starting private enterprises should also be given by the Government at a small rate of interest, as there are many skilled persons who, for want of capital, are unable to do anything, and, even if they try to obtain the necessary funds from others, the rate of interest is so high that the whole of their profit is swallowed up in paying the interest. This is especially the case in Burma.

(5) Government should supply the poor class of people, who are not in a position to manage a factory, machinery on the hire purchase system.

(6) Many intending enterprises have had to be closed down owing to the want of further capital, in such cases Government should step in and finance the concern, on the basis of public subscription.

(7) It has always been difficult for any new going concern with a small capital to establish itself on the market immediately. In such cases Government should come to the assistance by purchasing the product of the concern which can be disposed of through Government agents.

(8) To encourage further the establishment of a larger number of new factories, and to enable them to compete with the foreign market, the Government should not impose any income-tax on the profits, and exempt them from all taxes levied on the machinery required, and on all the articles used in the manufacture, for a period of at least five years.

Q. 6.—In all the above cases when Government is assisting financially, it should exercise supervision and control over the working, both by audit and the appointment of Government directors during the time such assistance is given.

Q. 7.—It is essential for the opening of new industries, and especially in such a province as Burma where there is no industrial spirit due probably to lack of faith, that Government should raise pioneer factories to prove to the masses that they can be worked commercially. Unless this is done, it is very difficult to prove the same by means of private capital, as there are very few capitalists ready to launch out on any enterprise they know nothing about. Pioneer factories.

Q. 8.—The Government should pioneer the industry by having their own model factories, and keep these factories going till such time as they are able to convince the people of the profits and benefits to be derived, and when the proof of its success has been established, Government may hand over the same to the people.

These pioneer factories should be fostered by Government till such time as there are many factories of the like established in different parts of the province.

Q. 11.—The Amarapura weavers have received assistance from the co-operative societies in the shape of improved machinery and small capital to purchase raw material; but, owing to the bad state of the silk market since the commencement of the war, no satisfactory result has been obtained. Co-operative Societies.

Q. 12.—As far as the silk industry is concerned co-operative societies for weavers should be encouraged in weaving centres and their objects and aims in forming such societies should be to work conjointly on a joint stock factory system.

Q. 12.—(*a*) Trade guilds and associations should be formed and encouraged in large industrial centres. Their objects should be to look to and safeguard the interest of that particular industry in all its aspects.

Q. 13.—Government aid should be given at all times, but on the principle that the aid will not in any way hamper or compete with any already established business. Limits of Government assistance.

Q. 14.—There should be no limitation on Government aid to a new enterprise which will try to compete with an established external trade, and every step should be taken to stamp out external trade by such aids. This is the only way whereby the industries of a province can be improved. As for instance, as long as Japan competes and has the monopoly of the silk market, there is very little chance of the improvement of the silk weaving industry here.

II.—Technical Aid to Industries.

Q. 15.—Technical aid is useful in the way of making known to the people the latest improvements and methods of an industry for which it is intended.

As far as the weaving industry in this province is concerned, the experiments carried out by the Weaving Institute have done much to improve the local weaving industry which improvements gradually, it is hoped, will spread throughout the province.

Q. 16.—The benefits derived by the local industry are that the people have been made acquainted with the working of elaborate patterns which being attractive in nature were readily adopted and found a ready market, and it is hoped when the Institute is in a position to teach designs, such as are manufactured for the Burmese market by Japan, the Burma weaving industry will then be able to compete with the Japanese.

Q. 17.—I don't think Government should lend its experts to those private firms or companies who are in a position to have their own.

Government experts should devote all their energies to those not in a position to pay for expert advice, which advice if not given would mean the closing of the business. Advice to these should be given gratis.

Demonstration factories.

Q. 19.—The silk industry of this province is one that requires Government demonstration factories and such factories should be opened up in all the chief weaving centres. Their objects should be to prepare and turn out efficient men who will after leaving be in a position to manage and conduct a factory.

Research abroad.

Q. 22.—Arrangements for the research of special subjects in the United Kingdom is advantageous and should be arranged for. But care should be taken in the selection of the candidates. Only such expert hands who are in touch with the development of that subject should be allowed to proceed there for research work.

III.—Assistance in marketing products.

Commercial Museums.

Q. 28.—From the little experience I have of the Calcutta Commercial Museum, I can say that it is quite a good institution, as it readily brings the manufacturer and the buyer in touch with one another.

Q. 29.—During the short time that I exhibited at the museum, the inquiries that I received prove that such an institution will be of the greatest value and assistance to industries and I would certainly suggest that such institutions should be opened up in each presidency or province. They should display all manufactured articles which would find a ready market in their respective provinces, and should, from time to time, advise the manufacturer of the requirements of their localities. At the same time they should also advertise largely by way of pamphlets, and do all they can to make the exhibits popular.

Sale agencies.

Q. 30.—To display and effect a ready sale of the products of minor and unorganised cottage industries, sale agencies are beneficial, and should be on the co-operative basis; and, where this is not possible, then the agencies should be formed by Government. The duties of these agencies would not only be to effect a sale, but also to advise the manufacturers as to the requirements of their markets.

Exhibitions.

Q. 30(*a*).—Travelling exhibitions, in my opinion, would be of advantage only if they exhibit such articles as are of interest to the local people, and such exhibitions should only be held at places where there are likely to be big assemblies due to a festival or other causes, as exhibitions of general character and held at a quiet place would be of no use.

Q. 32.—Government should take every means to hold and encourage only such exhibitions as would go towards benefiting the new and unorganised cottage industries and they should only be held as above suggested.

Trade representatives.

Q 34.—Trade representatives in different provinces, in India itself alone, would be a great boon to the industry, if the representatives work on behalf of the province and open up new markets for the products of those provinces that they represent.

Government patronage.

Q. 37.—Government departments should exhibit such articles which are not manufactured in India, and the manufacture of which in India will open up fresh avenues of industry and enable her to compete with imported ones. As to the other articles which are produced in India, a list of the same should be published for general information and guidance of those interested in the manufacture of those special articles to enable others as well to compete.

V.—Training of Labour and Supervision.

Primary education.

Q. 44.—Primary education is essential for industrial development as it tends to make the worker think for himself and at the same time to widen his knowledge in the special line he is interested in, and thus make him a better worker than an illiterate person.

Q. 44 (*a*).—I know of no institution in the industry in which I am concerned where an effort has been made to improve the labourers' skill and efficiency by means of primary education.

Steps to improve efficiency.

Q. 45.—For the improvement of the labourer's skill I would suggest the following :—

(*a*) 1. Primary Education.
2. Night Schools for whole-time workers.
3. Day Schools for half-timers.

(*b*) Technical Education—

By night schools giving technical knowledge of the special line in a simple manner, which could be understood by common labourers.

Q. 46.—Regarding the training of apprentices in factories, no special training is given in the factories. The apprentices learn just those things that they have observed, and are not in a position to solve difficulties by themselves which have not come within their observation. This is due to the lack of technical instruction. Apprenticeship system.

Q. 47.—Industrial schools generally produce far better and more intelligent workers than ordinary factories, where apprentices learn only by observation. Industrial schools.

Q. 48.—The two systems, *i.e.*, apprenticeship and industrial schools should be arranged in such a way that a student will be able to take advantage of both simultaneously. The hours of school should be arranged in such a way that the student will be able to take advantage of the factory. The teacher should lecture on the particular subject in which the student has got more facilities to study in the factory. He should at the same time accompany the students in the factory and should see that the student makes use of the knowledge given by him in the school. Co-ordination of tl two systems.

Q. 49.—Night and day schools are good in a way for less educated people and for others who can ill afford to take advantage of regular training in the Technical Institutes. But the training given in such night and day schools should be given by thoroughly efficient men. Half-time schools.

Q. 50.—The Industrial and Technical schools should be under the Department of Industries and not under the Department of Education because the Educational Department is not in touch with industries. Control of industrial and technical education.

Q. 51.—For the training of supervisors and of skilled managers, special schools for advanced training should be instituted, where instruction will be given only in the management of the particular department together with the training of the subject. Training of supervisors.

Q. 52.—Assistance should be given—(1) by way of scholarships, (2) part of expenses, and (3) free passage, etc., according to the grade of service, which would enable supervisors, managers, technical experts of private firms to proceed to foreign countries to study the conditions of the trade. Assistance to study abroad.

ORAL EVIDENCE, 31ST JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* In your answer to Question 5 (4) you say "Loans for starting private enterprises should also be given by the Government at a small rate of interest, etc.," and you go on to say "even if they try to obtain the necessary funds from others, the rate of interest is so high that the whole profit is swallowed up in paying the interest." By whom would it be decided whether a certain company should get loan from Government at a low rate of interest or not?—*A.* By those who are interested in that particular industry.

Q. Government must require somebody's advice, must it not?—*A.* Yes. I am interested in the weaving business; of course I would advise Government whether it would be advisable for it to give a loan for that particular business or not.

Q. Supposing there is a loss in the business, who will be responsible?—*A.* Of course there will be a Government director to look after the interests of Government if Government is giving the loan. At the same time that Government gives a loan, whoever advises that the loan should be given that person has got to see how the factory is managed. Of course he may not advise a loan if he feels that the business does not require such loan. The mere fact of his advising Government that a loan should be given means that there is a possibility of the business doing well.

Q. In answer to Question 5 you say "Grants-in-aid should be given by Government to factory owners in order to enable them to undertake the training of deserving students, etc." Who will select the students? The factory owners?—*A.* It will be left between the man and the factory owner. Of course in these questions there should always be an adviser to Government; if Government is giving grants-in-aid to these factory owners, it will be the business of that adviser to advise between the man and the factory owner as to what he will be capable of taking instruction in.

Q. But the adviser may not come in contact with the student? How is he to ascertain whether the student possesses the necessary standard of education?—*A.* There must be some restriction on the selection of candidates; he will select those who wish to take instruction in a particular factory to which Government is giving a grant; he cannot take anybody and everybody because everybody has not got a mechanical aptitude or an aptitude for learning or any other special trait. Therefore particular selection must be made and that selection must be left entirely in the hands of the man who recommends to Government that a grant should be given to such factory.

Q. Do you think it will be possible for him to keep in touch with the candidates?—*A.* Why should he not? I do not think it is an impossibility. There won't be such a large number of people taking advantage of your technical instruction in these factories that the man would not be in a position to advise.

Q. In answer to Question 5 under clause (6) you say "Many intending enterprises have had to be closed down owing to the want of further capital, etc." Can you cite any particular instance?—*A.* There is one at Nyaungu. They are running 10 looms, 8 Hattersley's and 2 Salvation Army looms. It is on the verge of being closed down. If Government does not come to its assistance I am afraid that within a few months the factory will have to be closed down.

Q. How would you advise the Government to come to its help?—*A.* I would give a loan repayable after a certain time.

Q. On what security?—*A.* On the security of the machinery. Of course if Government wants to further the cause of an industry here, it should be prepared to lose a certain amount of money.

Q. You want Government to give a loan without taking any security?—*A.* Of course the machinery there will stand for a certain amount of security.

Q. Suppose it won't cover all?—*A.* Of course that depends upon what is the amount of money asked for or what is required.

Q. You know the state of affairs in this particular instance as you are an expert: have you any idea as to what amount of money they want to keep the factory going?—*A.* They require about Rs. 2,000 or Rs. 3,000. It is not a big sum for Government to launch out.

Q. Is there not a co-operative society here?—*A.* Possibly so.

Q. Why should it not lend the money required by this factory?—*A.* I believe that they are arranging to amalgamate themselves with a co-operative body whereby they can get the necessary funds to continue.

Q. In answer to Question 48 you say "The two systems, *i.e.*, apprenticeships and industrial schools, should be arranged in such a way that a student will be able to take advantage of both simultaneously." Industrial schools in that case should be located where there are industries?—*A.* Certainly.

Q. Then there will be different types of industrial schools, one for say weaving industries and another for mechanics, etc., etc.?—*A.* There should be different industrial schools for different centres.

Q. Is it not your idea that you should select a place for establishing an industrial school where all the industries are grouped together?—*A.* Quite so, but then there are certain places having a particular industry of their own.

Q. And you want a school of that type established there?—*A.* Quite so. I suppose in the districts where there is weaving done and weaving forms the most important industry, a weaving industrial school would be a thing that is required. What is the good of having an industrial school dealing with a special subject which is not called for in that place?

Q. What will be the qualification of these students when they leave the industrial school according to your proposal?—*A.* It entirely depends on the class of industry and the class of students that we are going to deal with.

Q. I should like to know your ideas about it.—*A.* If you are going to deal with an ordinary man, and make him a practical man, the instruction should be such as will give him the necessary knowledge to produce that which is required from him. There is no use teaching him further beyond that.

Q. You don't propose industrial schools for higher class students, namely, those who would take charge of factories as supervisors or foremen?—*A.* Not for the present.

Mr. A. Chatterton.—Where did you acquire your knowledge of weaving?—*A.* In India.

Q. At Serampore?—*A.* No.

Q. Were you a student there?—*A.* I was Assistant Principal there.

Q. Where did you acquire your knowledge?—*A.* In Bombay at the Victoria Jubilee Technical Institute.

Q. After you left Serampore, were you employed by the Salvation Army?—*A.* That was long before that. In fact I was the first one employed by the Salvation Army when they started their business.

Q. Was that before Mr. Maxwell came?—*A.* There was Mr. Maxwell when they opened it in a commercial way. I was the first man on the field there and I worked up their business for them when they first started. Thereafter I joined Messrs. Greaves Cotton and then I joined the Government school at Serampore. In Greaves Cotton I was connected with Hattersley looms and I opened a factory at Surat.

Q. You have no experience with other types of looms than those of the Salvation Army and Hattersley's?—*A.* Yes, I have experience of the Churchill loom, in fact all types of Indian looms.

Q. Where did you work these?—*A.* At Anand; in fact I had been working at the loom; there the Salvation Army had two types when I was there, both their loom and the Churchill loom.

Q. How long have you been at Amarapura ?—*A.* Just four years.

Q. Here you have to deal with the problem of improving domestic industries ?—*A.* Yes.

Q. Are all the weavers here professional weavers ?—*A.* Yes, on their own indigenous loom.

Q. Are they financed by traders ?—*A.* No, by the co-operative societies.

Q. How many co-operative societies have given assistance to weavers ?—*A.* When I first came there were 12 men given to me who were financed by the co-operative societies. We took up improved looms.

Q. How many co-operative societies were there when you became Principal ?—*A.* I think there were about 12. Each society sent one student to me.

Q. Have you had any experience of the working of these societies ?—*A.* No.

Q. You have nothing to do with them ?—*A.* Not in the sense of a weaving master.

Q. In what sense do you mean that the co-operative societies have financed your weavers ? —*A.* That is, after they left the school they were supplied with machinery, and also with money for the purchase of raw material.

Q. How much money did a single co-operative society give to a single weaver after he left your school ?—*A.* These 12 men were given Rs. 200 to Rs. 250 of which about Rs. 100 went for machinery.

Q. The co-operative societies paid up to Rs. 250 to each individual weaver : was that on your recommendation ?—*A.* No, that was on the recommendation of the co-operative society. At that time the Institute was not on its present footing. It was worked purely as a co-operative concern. When I first came to Burma, these 12 students who came from different co-operative societies were learning under me.

Q. Who employed you here ?—*A.* The Burma Government.

Q. The Government lent your services to the co-operative societies ?—*A.* Practically.

Q. And you were employed to put these 12 students on to improved methods of weaving ? —*A.* Quite so.

Q. And then ?—*A.* When the students had learnt, they were given the necessary machinery and means by the co-operative societies to buy raw products.

Q. Was that on your advice ?—*A.* Not on my advice.

Q. Did you advise the co-operative societies that these students were fit to be entrusted with machinery ?—*A.* Yes.

Q. And did you advise what kind of machinery should be purchased ?—*A.* Yes.

Q. And they bought this machinery ?—*A.* Yes.

Q. What has become of these 12 men ?—*A.* These 12 men have closed down their work. Owing to the war the prices of silk having gone up.

Q. Are they all out of employment now ?—*A.* They were for some time, but they have been re-employed now. The institute is now spreading its activities further. Seeing that these people have closed down and are not in a position to look after themselves owing to the heavy prices in the markets, the institute is now extending its activities still further; we are canvassing for work for them; we are opening out markets by selling their products for them.

Q. Are you financing these 12 men ?—*A.* For the present we are financing them.

Q. When these men were supplied with machinery roughly how much money was spent ?—*A.* Rs. 1,200.

Q. Rs. 100 each ?—*A.* Yes.

Q. How much was given them as working capital to go on with ?—*A.* Rs. 1,800.

Q. Rs. 150 each ?—*A.* Yes.

Q. How long ago was this ?—*A.* That was three years ago.

Q. Have they repaid to the co-operative society any of the money that had been advanced to them ?—*A.* No.

Q. None at all ?—*A.* None.

Q. Why not ?—*A.* Because they closed down owing to the bad state of the market.

Q. How long ago did they close down ?—*A.* About a year after that.

Q. During that year did they make a profit or did they incur losses ?—*A.* They incurred losses.

Q. Notwithstanding the fact that you gave them improved machinery ?—*A.* Yes.

Q. To what do you attribute this loss ?—*A.* The loss is due first to the high prices of the raw product. The prices went up 150 per cent.

Q. Three years ago the price of silk was down, not up ?—*A.* The first year after the war the price of silk went up a little; just a little before the commencement of the war the price

was moderate, then there was a slump in the market. These boys were working on their own at the time, with the result that, when they took their finished articles to the market, the merchant immediately offered a very low price; there was nobody else to assist them or any middlemen between them and the merchant, and the merchant took advantage of the position, with the result that they incurred loss not only on account of the high prices at which they bought the raw product, but on account of the diminished prices they received from the merchants.

Q. So these 12 men have lost all the capital advanced by the co-operative societies?—*A.* Yes.

Q. How long were these 12 men with you?—*A.* They were a year with me.

Q. What did you teach them?—*A.* We taught them to work on the improved frame loom.

Q. What is the width and quality of weaving on the indigenous loom?—*A.* Anything between 12 and 22 inches.

Q. What are they weaving now on the improved loom which you have introduced?—*A.* 44 inches.

Q. Have you provided them with warping machinery?—*A.* No.

Q. How do they do their warping?—*A.* They do it in the old fashion.

Q. On pegs?—*A.* On vertical mills.

Q. Have they got vertical mills?—*A.* They had those before I came.

Q. Was that introduced before you came?—*A.* Long before improved weaving was first started they had those.

Q. Is it an indigenous machine?—*A.* Quite so.

Q. They were fairly advanced in methods of warping?—*A.* Yes.

Q. Is there any sizing done to the silk?—*A.* Sizing is done on the machinery itself.

Q. What do they size with?—*A.* With wheat or rice flour.

Q. What is the silk they are using?—*A.* All Chinese silk.

Q. Do they get any silk from India?—*A.* Not at all.

Q. How many students have you got in the school now?—*A.* I have got 65 students.

Q. On what terms do they come?—*A.* They come without machinery, and the condition on which they are taken is that they must purchase improved machinery; also they must be expert weavers on indigenous looms before admission.

Q. Who sends them to the school?—A. The different co-operative societies, from all over Burma.

Q. Do any of them come on their own initiative without any suggestion from other people?—*A.* Many.

Q. Do they enter into an agreement with you to purchase improved machinery?—*A.* That is the first thing.

Q. What improved machinery are you advising them to purchase?—*A.* The one that is taught at the institute, and no others.

Q. What kind of loom is that?—*A.* The improved wooden loom and Hattersley's.

Q. What is the width of the Hattersley loom that you are using?—*A.* 50 inches reed space.

Q. Do you find it quite satisfactory?—*A.* Perfectly. In fact at the institute women are working on these looms.

Q. Are the weavers here a stronger class than the weavers in Bengal?—*A.* Not in the least; in fact I think they are much weaker.

Q. Would you recommend us to use Hattersley looms in India?—*A.* Certainly.

Q. For cottage weaving?—*A.* Yes. There are a large number of Hattersley looms, about 100, working in different homes in Surat alone, which I introduced in 1908-09. They are working on these looms, not with thrown silk but spun silk; of course the woof is thrown silk.

Q. Are the weavers now in the Saunders Institute being financed by the co-operative societies while they are working at the Institute?—*A.* No, they get scholarships from Government.

Q. All of them?—*A.* Yes.

Q. How much does the Government give them?—*A.* Rupees 15 a month.

Q. For how long a period?—*A.* For six months.

Q. Is six months sufficient time for them to acquire a complete practical knowledge of the work you want them to do?—*A.* Quite enough because they are expert weavers before they come to the Institute.

Q. I understand that. Are you using dobbies and jacquards?—*A.* No, we have been negotiating for jacquards, but we cannot get them now.

Q. Do you multiply the healds for pattern weaving?—*A.* Yes, up to 12 healds.

Q. That is in the Salvation Army Loom?—*A.* Yes.

Q. Have you introduced a large number of new patterns in this loom?—*A.* Quite a variety.

Q. Are they popular?—*A.* Very.

Q. Is the success of your weaving due to the variety of patterns at all?—*A.* Yes, in a kind of way. Where the loom has not gone out the patterns have gone out.

Q. Which is more important relatively, new loom or new patterns?—*A.* Of course the pattern is the first thing.

Q. More important than the loom?—*A.* Yes.

Q. Is the success of the weaving that is now going on due more to the variety of patterns which you have introduced, or to the improved mechanical efficiency of the loom?—*A.* At the present moment it is due to the pattern because there is no need for looms on account of the bad state of the market, so that the patterns have made an easy way practically everywhere.

Q. Are these weavers who are using improved looms working as individuals or are they associated in any way?—*A.* They are working as individuals.

Q. Are they repaying any money to the co-operative societies?—*A.* Not at the present moment.

Q. Have you got any idea as to how much money the co-operative societies have advanced them up to date?—*A.* Rupees 2,500 between 12 men.

Q. That was given originally? Were any sums given subsequently?—*A.* Nothing since then to my knowledge.

Q. Are not the co-operative societies then assisting this movement?—*A.* Nobody has been applying for advances; owing to the bad state of the market, the high rates for the raw material and the low rates for the finished article, no profits could be made. How are they then going to pay the advances back to the co-operative societies? That is the reason they are not applying for advances, when the times become better, they may apply for advances from the co-operative societies, not at present.

Q. Is cotton weaving going on in your institute?—*A.* Yes, we teach cotton weaving also to those people who come from the cotton districts.

Q. Are you teaching them silk also?—*A.* Yes, both. I have got a new experiment in Amarapura quite outside the institute.

Q. What is this experiment?—*A.* To those boys that have left my school I am giving work to do and opening out markets for them. As the rates for silk are at present high, they are earning their living by weaving cotton.

Q. Does the Saunders weaving institute undertake any financial responsibility in regard to this work that you are now doing?—*A.* That is running in conjunction with the school at present as an experiment.

Q. To what extent are you getting orders?—*A.* We have only just started.

Q. Have you got orders to the value of half a lakh of rupees?—*A.* No.

Q. Then on what scale?—*A.* We have got a very small place and it is on an experimental scale.

Q. What is the scale of the experiment?—*A.* There are only about 14 men.

Q. What is the value of the orders put out so far?—*A.* None, we have only just started.

Q. You have not done any work? You are just proposing to work?—*A.* We have just started work. We have not put anything on the market yet or canvassed for business, we are still manufacturing.

Q. How much have you manufactured?—*A.* Not more than 15 yards on each loom.

Q. What is the value?—*A.* About Rs. 500 or Rs. 600 for the stuff we have manufactured now.

Q. Who is at the back of this? Who is financing?—*A.* The School, that is, the Government.

Q. To what extent are you authorised to incur financial responsibility in this direction?—*A.* As an experiment it forms part of the school; we are just experimenting, and the funds come out of our funds.

Q. You have got a budget?—*A.* We have got a special fund for the purchase of raw material.

Q. Where does this fund get supplies from?—*A.* From Government, and all profits from the fund go back to the Government.

Q. You have got a lump sum grant?—*A.* Yes.

Q. How much is that?—*A.* Rupees 4,000.

Q. When was that given?—*A.* That was when I first came in 1914.

Q. Is the fund still intact?—*A.* Yes.

Q. Probably you have turned it over so many times?—*A.* There was only one grant since the fund was open. We have received no further advance. We were able to make the fund grow. In fact it has earned certain profits every year.

Q. How much does this weaving institute at Amarapura now cost Government? I understand it is under the Educational Department?—*A.* No, it is at the present time under the Co-operative Department.

Q. Is it under the Registrar of Co-operative Societies?—*A.* Yes.

Q. What is the annual budget?—*A.* Of course our annual budget for the last couple of years has been rather high.

Q. What is the amount?—*A.* About Rs. 15,000 on the average. Anything between Rs. 15,000 and Rs. 20,000.

Q. Does that include cost of machinery?—*A.* Yes.

Q. How much of this was incurred as capital expenditure?—*A.* I could not say that at once.

Q. Will you furnish us with copies of the annual reports of your school?—*A.* So far we have had no annual report for the school.

Q. Do you furnish any report to Government?—*A.* Not so far.

Q. Within the last four years have you made no report to Government?—*A.* Very likely the Co-operative Department has done; the school has not sent any report.

Q. Don't you send any report to the Registrar of Co-operative Societies?—*A.* No, because the Registrar is very closely in touch with us; he knows all about the school, and he reports accordingly.

Q. Have you got copies of his report?—*A.* No; I can obtain copies of that report.

Mr. C. E. Low.—*Q.* You have certain *ex*-students who I understand are weaving silk in your factory, is that so?—*A.* Yes.

Q. What are you doing with reference to the weavers commercially or otherwise outside your factory? Are you doing anything for them at present? Or are you merely contemplating helping them to sell their goods?—*A.* In Amarapura we are helping them directly. Those that have been in touch with the institute and have learnt in it we are helping by means of this new experiment which I explained a little while ago.

Q. Are you giving them fresh patterns?—*A.* We are giving them material; we sell their goods for them, and they make profit on them.

Q. You are purchasing and making over silk to them?—*A.* Yes.

Q. And you repay yourself out of their manufactured goods?—*A.* Yes, we take back their goods.

Q. What steps are you taking to arrange for the sale of the manufactured articles?—*A.* As far as silks are concerned, we only work to orders.

Q. What steps do you take to obtain orders?—*A.* We send out samples that are woven in the institute to different people.

Q. For instance, what kind of places or people?—*A.* Well, we do not send samples to business houses.

Q. You have had no firm offers?—*A.* Yes, we have now had from one or two firms in Tavoy.

Q. Are you trying to find customers in India outside Burma?—*A.* No, it is all we can do to supply Burma. I have received many orders from India, but I have had to refuse them.

Q. Is the price offered you sufficient to pay a reasonable profit, taking into account the increased cost of material?—*A.* It won't give a very large profit, it would just keep us above water.

Q. If you increased your markets could not you help more people? *A.*—Certainly; that is the reason for the experiment that we are carrying out.

Q. Have you ever had the idea of putting your silk on the American market?—*A.* I have sent samples to America but I have heard nothing.

Q. To what firm?—*A.* I forget now.

Q. Messrs. Valentines?—*A.* I don't particularly remember.

Q. You can obtain lists of such firms from the Commercial Intelligence Branch of London Board of Trade, and you can also get confidential information as to the financial standing and liability of such firms; do you contemplate doing anything of that sort?—*A.* Not just now.

Q. For how long has this experiment been going on?—*A.* It commenced just a month and a half ago. There are a lot of preparatory stages before you come to weaving.

Q. Is this experiment intended to prove whether the weavers could produce stuff according to the requirements of the market, or whether the technical processes are satisfactory or

what?—*A.* Technical processes are quite satisfactory; it is the markets that are unsatisfactory.

Q. You said that you were not going to push your goods in the market until you satisfied yourself as to the success of the experiment; I do not quite follow you?—*A.* We must first have sufficient stuff before we put it on the market. There is no use of our trying to canvass business when we have got nothing to supply. When we have a reasonable quantity we shall market the goods; and on the successful sale of those product and the sufficiency of the profit that we get, it is worth while to try further.

Q. You are not now able to deliver a large quantity of a certain stuff or pattern?—*A.* No.

Sir F. H. Stewart.—*Q.* What is your idea about the future of this silk industry? Do you wish it to be a factory industry or a cottage industry?—*A.* Cottage industry.

Q. But you refer in your written evidence in several places to the factory system and you say "should a number of factories be started, all can be maintained in full time employment," and later on you speak of co-operative societies for weavers and say "their objects and aims in forming such societies should be to work conjointly on a joint stock factory system"?—*A.* Certainly, if factories were instituted over several places and there was sufficient work to give them full employment, then they could work on the joint stock system.

Q. Is it your idea that the factory system must come with power looms or with hand looms?—*A.* It need not necessarily be a power loom factory.

Q. Is it your idea that it should be or not?—*A.* Well, yes.

Q. Is the Burman sufficiently energetic and industrious to work regularly as a factory hand?—*A.* Well, in a kind of way he is.

Q. Is he so in this particular line, weaving?—*A.* Yes, he is.

Q. Are the weavers largely illiterate?—*A.* No.

Q. The percentage of literacy in Burma we have been told is much higher than in India generally?—*A.* Yes.

Q. But it is not so among weavers?—*A.* No.

Q. How does the Burman weaver compare in the matter of intelligence and education with the Indian weaver?—*A.* From the experience that I have gained, between an Indian weaver and a Burman weaver I think the Burman is much more clever in picking up knowledge of machinery, he has got a mechanical turn of mind.

Q. For the improvement of skill you want to have night schools; will the weavers come to these night schools?—*A.* Yes.

Q. Is there anything of that sort being done now?—*A.* No.

Q. Have you thought of starting one yourself?—*A.* No, not as yet.

Q. What hours do whole timers work in Burma?—*A.* Say, 11 hours, from about 7 to 5 in homes. There is no particular hour for work. There is practically no factory formed in Burma except one at Nyaung-u, and they work from 7 to 5.

Q. What are the hours in your institute?—*A.* 10 to 4.

Q. Do the co-operative societies co-operate in sales at all? Do they do anything to sell the products of the weavers?—*A.* Nothing has been done so far.

Q. You say that "Industrial schools generally produce far better and more intelligent workers than ordinary factories . . .": do you believe that it is better that the student should be put through an industrial school before putting him to actual work in the factory?—*A.* Certainly because theoretical training besides practical training is far better than mere practical training.

Q. Are there any industrial schools in Burma?—*A.* None.

Hon'ble Mr. H. Thompson.—*Q.* Could you tell us what has been done towards sericulture at Amarapura with a view to produce silk?—*A.* It is only a plantation which has been put down; it is still in its infancy. We have tried a small experiment, but so far the mulberry plants are not sufficiently developed to permit of our carrying on the experiment further, but as soon as the plantation is sufficiently large and yields a sufficient supply of leaf, we shall carry on the experiment.

Witness No. 450.

Mr. A. E. English, C.I.E., I.C.S., *Commissioner, Maymyo, Burma.* *Mr. A. E. English.*

Written evidence.

I.—Financial Aid.

I take large undertakings, such as paddy milling, chemical industries, etc., separately from cottage industries.

Capital.

Large industries.—There has been a pronounced tendency in the last 20 years in Burma and specially in Rangoon for capitalists to look to speculation and speculative undertakings as a means to wealth. We have had our land boom, oil boom and mining booms and the Bank of Burma crash. Capital has of course been invested in sound concerns such as teak, rubber, oil and mines but capitalists have neglected a good many developments which might have been both justified and expected such as mofussil banking, sugar, jute, cocoanut and other palm oils.

Cottage industries.

The speculative nature of a good many of the Rangoon companies has probably deterred Burmese capital from investment in industrial concerns. Burmans have started mills (timber, paddy, etc.) but have frequently lost their money owing to bad management and bad accounting. Hence Burmans have become shy of Rangoon or local companies and their spare money goes into land purchase and promotes the tendency to the accumulation of land in a few hands. The Burman is in no way hide-bound by caste or otherwise and is ready to put his capital into any safe and paying concern. Given good and successful management Burman capital is bound to be available for industries in the future.

As Registrar of Co-operative Societies I helped in the financing of the silk weaving industry in Amarapura. We began with financial aid through societies. It soon became apparent that financial aid was not enough and that improvement in technique was essential if local fabrics were to hold their own against those imported. The Saunders' Institute was therefore established and improved technique resulting therefrom combined with cheap credit have done much to keep the industry going. In normal times it is probable it would even have flourished but the war has of course depressed it.

Co-operative Societies have also assisted the cane weaving industry and others, such as carpentering, and boot making industries in Mandalay with cheap credit and by arranging co-operative purchase of raw materials. There are also Co-operative Societies for the exploitation of sleepers and stone metal which promise well. The rates of interest in Upper Burma where cottage industries are more common than in Lower Burma are largely ruled by custom and are extremely high (from 30 per cent. to 100 per cent.). Given a proper economic survey of such industries on which to base financing the co-operative movement can therefore render great assistance. Such cottage industries as still remain are probably, given cheap credit, destined to maintain themselves. The Burman is a free buyer of imported goods and has discarded indigenous products where the imported article was clearly more useful.

vernment istance.

With the exception of the railway I know of no case in which Government has given financial aid to industrial enterprises.

I think the best way in which Government can financially aid industries is by supporting with funds financing institutions on terms which will ensure some loss to the institution in case the enterprise assisted fails. I would prefer however to lay down that Government should be prepared to give financial assistance to industries and to select the method of doing so on the merits of each case. Conditions in different countries differ and it would be a pity were the Commission to pronounce too strongly in favour of any one system.

oneer factories.

I have no personal experience of pioneer industries. I understand that the Government Rubber Plantation was a success in this way and it is said that the aluminium factory in Madras was also a success. The principle seems to me sound and it is a principle on which we are working our colonization schemes. There Government finances the breaking of the land and takes the risk of the land proving unsuitable. As soon as its suitability is established a co-operative central bank takes colony societies over and finances them in the usual way. We want industries and factories established and it is right and advisable for Government to test the possibility of working them as paying concerns.

ancing ncies.

Omitting large companies the smaller mofussil mills are principally financed by Chetties As a rule they are established and worked at first by individual Chinese or Burmans or by small companies or partnerships. The Chinese understand accounting and generally retain the mills and run them successfully. Burmans as a rule do not understand accounts and have practically no opportunity of learning accounting. They frequently begin with only sufficient capital to erect the mill. They borrow the working capital at 20 per cent. to 40 per cent. interest. Interest payments and bad accounts lead to mortgages and foreclosure.

Cottage industries are largely financed on the advance system by which funds are given in raw material or cash which have to be paid by the sale of manufactured goods at specially low rates. The rate of interest on such transactions works out at from 50 per cent. to 120 per cent. and the result is that the actual artisans work from hand to mouth and in many cases are practically slaves. This was specially so in the silk weaving industry where artisans were always kept in debt and could not even change their employers as a civil suit and arrest were held over them *in terrorem*.

In my opinion the time is ripe for the establishment of mofussil branches of European run banks in Burma. So far we have been unfortunate. Most of the banks in Rangoon are exchange banks and do not seek mofussil business. The Bank of Burma did not want it and the Bank of Rangoon has hitherto hardly sought it. We appear to be behind India in this respect. Mofussil branches of course presuppose a staff which knows Burmese and understands the existing credit system of the country. It should surely be possible for Europeans to compete with the Chetties who are foreigners and who err against one of the canons of banking by exchanging their agents in the mofussil towns every 3 years. Given

mofussil branches of strong well-managed banks the rate of the interest should be reduced from 24 per cent. or 30 per cent. to 12 per cent. and 15 per cent. This would render the prospects of the smaller industrial concerns very much better. I do not suggest that banks should overload themselves with long-term loans. There is much business to be done in financing trade, crops and the transport of crops and the success of many of the Chetty firms shows that it is possible for foreign banking institutions to thrive.

Co-operative Societies.

I have already mentioned these. Co-operation can help in the exploitation of timber, sleepers, bamboos and forest produce generally, of stone metal, in the furniture and carpentering trades, in cotton ginning and in the provision and working of other machinery employed for preparing raw materials for market, in the collection and sale of hides, in the pottery industry, in mat and basket weaving, umbrella making, sandal making, boat building, cart building, dairying and in financing arts. It can do this by cheapening credit, by enabling the purchase of machinery, by joint purchase of materials, by providing intelligence as to markets and assisting in advertising. Societies also provide a machinery for imparting instruction to individual workers. In the same way as they link up the agriculturist with the Department of Agriculture they can in industries link up the artisan with the Department of Industries.

Limits of Government assistance.

In the present conditions of Burma there is little fear of undue competition with private enterprise.

In the above remarks I have assumed that it is rather the desire of Government to establish native industries, that is industries under native ownership and control, than large centrally managed European concerns which will do little more than provide employment for labour. There is little need for the latter kind of institutions at present. In Burma labour is scarce and the object should be to develop industries on a smaller scale, and of a local character. Our agrarian policy has led to the rapid increase of landless cooly population. We do not want to develop a large industrial cooly population which will not even be Burmese. What we should aim at is to direct the spare capital that there is in the country into small industrial concerns thereby lessening the pressure on land as an investment. We shall thus also provide occupation for our "literati."

II.—Technical Aid.

Technical aid in general.

The Saunders Weaving Institute has certainly, I think, been a success. It does not set out to teach weaving to children; its definite object is to take adult expert weavers and teach them improved technique. In this way time is not wasted in teaching boys and girls—a trade which they afterwards do not engage in. The institute also requires that a student must be in a position to engage in weaving after his course on his own or borrowed capital. I think this system is particularly sound and would apply where other technical instruction is given.

I would like to see a technical institute established in Mandalay. It might begin with masonry, blacksmithery and carpentry and it might so to speak give a finishing course to artisans who have already adopted such trades. If it was successful it could be expanded.

Demonstration factories.

I quote the case of jute. As jute grows wild in many parts of Burma and is cultivated to a small extent already in the delta, there is good ground for believing that Burma could produce at any rate a large part of the jute required for the gunnies in which our rice is handled. At present there is a deadlock. The cultivator says, 'Show us the jute mill and the market'; the capitalist says 'Show us the jute.' In such a case it is for Government to demonstrate that jute will grow and then to demonstrate that jute milling will pay. It is possible of course that the paddy millers are sufficiently enterprising to establish jute mills when once Government has proved that jute will grow. But in effect it is necessary to do somewhat more than to prove that jute will thrive. Government must show that it will grow and the cultivator must show that at prices at which it can be manufactured at a profit he will grow it. The quickest way of determining these points is for Government to prove that jute will grow and also that it can be manufactured at a profit after leaving the cultivator a profitable return. I would also establish a demonstration pottery. I understand that we have excellent clays and earths in Burma and that much of the crockery now imported from Japan and Central Europe might be made in the country. Without experiment by Government it is most unlikely that any progress will be made. The method of sending young Burmans to England to walk about in potteries and attain a smattering of pottery methods is perfectly useless. Government expected one such to return to Burma and establish a factory. This presupposed the command of capital and business ability and a knowledge of accounts. These were not forthcoming and money spent on such scholarships has of course been lost.

Industrial Surveys.

Our Agricultural and Forest Departments are very seriously undermanned. Before real results can be obtained we require 10 or a dozen agriculturists of the deputy director class and before a proper use can be made of our forests, I imagine we require a superior staff of at least 3 times the present strength. I suspect we might do more at minerals. On the agricultural side experiment with new crops (not necessarily new to Burma) is essential so that there may be a diversity of crops in all areas and that the most valuable crops may be grown subject of course to proper rotations. Only after such

experiments shall we be able to record the results in a survey. On the forest side exploitation is confined to teak and a few other species. The forest area is enormous and there is yet much reservation to be done. Shortness of staff renders new reservation difficult and has precluded the completion of working plans in many of the forests already reserved. Excepting teak and a few other species extraction is in many cases inadequate and in others unregulated. There is now a Research Officer but it is quite impossible for one officer to conduct all the research desirable in Burma. I say without hesitation that our existing knowledge of the forests of the country is grossly inadequate. Forests should be our main secondary industry after agriculture. If properly developed and worked they will be a boon rather than a curse to the inhabitants of the country.

III.—Assistance in Marketing Products.

Commercial Museums, etc.

Generally speaking I think one of our needs is assistance in marketing products. The Commercial Museum in Calcutta led to several orders for silk after samples had been sent. The Commercial Museum and Sale Depôt at Madras struck me as a useful institution which we might copy in Rangoon after the war. Burma is likely to be again resorted to by travellers and sight-seers and such a sale depôt would be useful to them and to the country and would serve as an excellent advertisement. Some system for exhibiting our products in London, Paris and other centres seems also to be desirable. Exhibitions should, I think, be developed and I would have them popular in character. I would also have trade representatives in Great Britain and foreign countries for particular trades or groups of trades.

Banking facilities

The internal trade of Burma is much hampered by the absence of up-to-date banking facilities. The post office is expensive and the *hundi* though used is not popular. I have before suggested a progressively decreasing fee for money orders proportionate to the increased amount of the order. In Austria-Hungary the post office does a regular cheque business. Remittance of funds is a serious difficulty in Burma.

IV.—Other forms of Government Aid to Industries.

Land policy.

I have no remarks to offer on the supply of raw materials or on our land policy. In neither case does any change seem necessary.

V.—Training of Labour and Supervision.

General.

Compared with Indian provinces Burma is in a satisfactory position as regards primary education. I would improve the efficiency and skill of artisans by technical schools on the lines of the Amarapura Weaving Institute. For unskilled labour the Burman, where he is so employed, should be suitable as he is both intelligent and clever with his hands. At present the Burmese cooly is mostly employed in agriculture. I would certainly place industrial and technical schools under the Department of Industries. I have seen some cases of serious unpracticality where the Educational Department has embarked on technical training.

VI.—General Official Organisation.

Proposed organisation.

There is at present no regular organisation in Burma for development of industries. A Director of Industries was proposed but the then Local Government thought such a post not yet necessary and that the Registrar of Co-operative Societies could do what was needful. I am not at present in favour of a Board of Industries, I still consider the proper system would be a Civilian Development Commissioner who should be a senior Deputy Commissioner or a Commissioner who should deal direct with Government. Under him should be the Director of Industries with his experts, the Director of Agriculture with his experts and the Registrar of Co-operative Societies. Neither industries, I mean the smaller ones, nor agriculture can get on without finance. Co-operative societies must be the financing medium for both agriculture and industries. Again agriculture and industries are in many cases intimately connected. All three departments should be under one head whose duty it would be to co-ordinate them and to see that they work in together with the maximum of efficiency. In Burma this is all the more necessary as we have now adopted a definite colonization system, at present controlled by the Registrar of Co-operative Societies, where new land is concerned. The Development Commissioner should, if possible, have been himself Registrar (I am retiring myself and am not seeking a job). The Director of Industries should preferably be a business man and he should have experts when necessary. I am against an imperial department at the start.

VII.—Organisation of Technical and Scientific Departments.

College of Commerce.

It is a case of "*solvitur ambulando.*" I think the Development Commissioners important. The Development Commissioners of the different provinces will correspond and keep in touch and from time to time it may become necessary to appoint scientists or experts for all India. Out of these in time an imperial department may grow. I think that a separate college of commerce is probably unnecessary in Burma but I think there should be a chair of commerce in the coming University and that diplomas in account keeping and commerce should be granted. Assuredly one of the factors making for the ill-succes in Burman enterprises is ignorance of the principles of accounting.

VIII.—Collection and Distribution of Commercial Intelligence.

I consider the dissemination through publications of commercial intelligence and information on industrial subjects, *e.g.*, forests, etc., of great use. Immediate results are not always got but such information falls on fruitful soil every now and then and the results are worth the expenditure. Part of the success of German agriculture is due to the excellent system of information as to prices, crops, requirements, etc., which is made available to all farmers. Much more use might be made of the newspapers both English and Vernacular. The Co-operative Department in Burma some years ago arranged with the editor of a vernacular paper for a monthly co-operative supplement. Results show that this is very generally read in all societies. It has provided an extremely useful medium for disseminating information. "Advertisement is the soul of business" and Government should do much more than it does at developing the advertising principle. Publication of industrial information.

IX.—Other forms of Government Action.

It is unfortunate that in Burma the crops and in particular the paddy crops are of practically no use as security for their own movement. Middlemen work on borrowed capital and secure such borrowings on jewelry and land pledged. The necessity for such is one reason why capital is sunk in land and jewellery. That sunk in jewellery is immobile for half a year, whilst that sunk in land creates a really unnecessary demand which tends to push out the land-owning peasant. The remedy is a third-party godown owning company which would have depôts at railway stations, etc., take over paddy, grade it and give receipts on the system which obtains in Canada. Such receipts would then be pledged at banks and the cash obtained used for further paddy trade. Some such system would obviate the absurdity and waste of energy involved in 80 or 100 traders storing paddy in 80 or 100 godowns at one railway station. Each such godown requires a durwan. The godowns are temporary and badly constructed. The paddy suffers from damp and deteriorates. It is with paddy that I would make the first experiment in grading. In Canada Government inspectors grade all wheat. This matter of paddy is hardly an industrial one but I mention it as a great deal of pledgeable security which might be used for industrial concerns is at present misused in financing the movement of the paddy crop. Paddy should finance its own transport. Certificates of quality.

It is hardly necessary to criticise these in Burma as they hardly exist. The development of the country is and will be seriously hampered until we are equipped with a decent system of roads and railways. Waterways in the delta are on the whole good and given a regular programme of improvement should meet requirements. To quote an instance, the absence of a road from Minbu District to Kyaukpyu (An) prevents the poverty-stricken Kyaukpyu District from supplying salt fish, cocoanuts, etc., to the dry zone. Were the unjustifiable restrictions on salt manufacture removed Kyaukpyu could also do a lot in salt supply. There would also of course be a reverse trade in oils, etc., from the dry zone. Communications.

It is commonly said that our match factories are unable to thrive owing to the high freights imposed on the sea voyage from Rangoon to Indian ports and the resultant favouring of Japanese matches. If this is so the sooner the evil is remedied the better. Shipping freights.

As I have said above the main industry of this province subsidiary to agriculture should be the lasting one of the exploitation of its forests. The forests are extensive and contain an enormous variety of trees many of which are valuable. They also contain much other produce of commercial use. If properly conserved they not only persist but improve and in this respect are unlike mines and oil fields. They are well placed all about the country and in my opinion one of the very first things to do in promoting industries is for Government to provide an adequate forest staff to develop these forests to the best advantage. It is of course necessary to develop other useful industries, such as leather working, pottery, weaving, etc., but it is certain that the forests can provide remunerative occupation for all classes of the community from cooly to capitalist for years to come provided they are properly conserved and worked. The policy of the past appears to have been in forest matters to get the maximum revenue with the minimum establishment regardless of waste. It is the long view that must be taken and the proper policy should be to put on the full staff now with a view to continuous and progressive development until the maximum extraction and revenue are arrived at in perhaps 50 years. We require silviculturists, research officers, working plans officers, commercial officers, revenue collectors and forest engineers. We want capital for forest roads, for forest railways, for forest machinery, for silviculture and for improvements. Forest Department.

A serious need in the future will be chemical manures or the ingredients with which they are made and Government assistance in the development of such industries would seem deserving of assistance.

ORAL EVIDENCE, 31ST JANUARY 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* Under the heading of Government assistance you say, "I think the best way in which Government can financially aid industries is by supporting with funds financing institutions on terms which will ensure some loss to the institution in case the enterprise assisted fails." Is it in your mind that you should have an industrial bank? Have you got any definite suggestions to make?—*A.* I have not. I should like to work that out. I think that Government assistance is desirable and it can be done safely.

Q. Is it by way of an industrial bank, or in any other form?—*A.* I should like to think that out.

Q. Then you say, "In my opinion the time is ripe for the establishment of mofussil branches of European run banks in Burma." Of course you know there are two classes of European banks, one, the presidency banks which by the Act cannot lend money for industrial purposes, and the other, the exchange banks who do not do it?—*A.* I know. I think it is very regrettable that in Burma a great opportunity has been lost, and that no banks of the type of the Alliance Bank or the Allahabad Bank have pushed out into the districts. Lower Burma has many large towns and there is good business going and at present it is done by Chetties from Madras who do not know the language and who break the banking canon in keeping their men at a branch only for three years.

Q. Your solution then comes to this, that there should be a sort of industrial banks with branches?—*A.* No. I was discussing the question of banking in Burma for remittance purposes and everything else. We are badly off for banking facilities and we should have non-exchange and non-presidency banks which might spread their operations all over Burma.

Q. Then it comes to what I was telling you?—*A.* I would not call it an industrial bank.

Q. You would call it a bank which will finance industries?—*A.* I want banks that will finance industries. They would not be exchange banks or presidency banks or co-operative banks, but joint stock banks.

Sir F. H. Stewart.—*Q.* Has the Bank of Bengal got any branch here (Mandalay)?—*A.* There is a branch of the National Bank here. There is no branch of the Bank of Bengal here There is one in Moulmein and one at Akyab.

Hon'ble Sir R. N. Mookerjee.—*Q.* You say, "I would like to see a technical institute established in Mandalay." You know the difference between a technical institute and a technical school? If you call it a technical institute it means that it is intended for higher technical education. What is it in your mind?—*A.* To begin in a small way, but I would have experts as I have stated there for carpentry, pottery, etc.

Q. In your opinion Burma is quite ripe for a good technical college?—*A.* I think what we want is much more than what we have had at Amarapura which is slowly developing.

Sir F. H. Stewart.—*Q.* Has anything been done, so far as you know, in the way of looking into the possibilities of sugar and jute in Burma?—*A.* Jute is just being taken up. When I was in Bassein as Commissioner last year, I got some seed from the Agricultural Department and gave it out to jails and others to try. It grows wild all over the delta.

Q. Which species?—*A.* Capsularis. It grows in northern Burma too. It has been grown in a small way in the delta and made into rope by Attia's firm in Rangoon and the rope, etc., was shown at the last exhibition. Messrs. Steel Bros. planted about an acre with the seed I got at Bassein but it was sown too late and was poor. Some very good jute was grown, however, at the Myaungmya jail and I understand that that has been sent to Calcutta and reported on.

Q. Would not labour be a very difficult problem?—*A.* I am doubtful about it. After all, you have got to use labour on paddy; jute may require a little more labour, but rent is probably lower than in Bengal.

Q. The Burman would take to the cultivation of jute?—*A.* Yes, I think so, if it pays.

Q. And similarly with sugar?—*A.* There will be absolutely no difficulty with sugar either, if it pays. Sugar is grown in a lot of places.

Q. Is there a large Burman capital available for industry?—*A.* Yes, I think there is. The present tendency is to put it into land which is a nuisance. The reason is that the Burman has tried in the past putting it into local concerns, such as paddy mills, timber mills and things like that which owing to bad accounting have in many cases got into Chetty hands or Chinese hands.

Q. Did the Burmese suffer very much from these various smashes in Rangoon?—*A.* I do not think they suffered much in Rangoon. They suffered a lot up Prome way. There was a sort of burst of joint stock small mills,—rice mills, timber mills and others—and a lot of money was lost. I know a good many cases where they began with only sufficient capital to erect the mill.

Q. The working capital of these came from the Chetties?—*A.* Yes, or from other money lenders at 18 per cent., 24 per cent. and higher rates.

Q. These cottage industries to which you refer in your written statement they are financed by Chetties still?—*A.* Yes, and by other money lenders. There is always the advance system. They advance the people raw material or cash and always keep them in debt so that they cannot go to a person who can give them better terms.

Q. The remedy for that lies with the co-operative societies?—*A.* Yes. But the co-operative societies can only do their financing. The middlemen disposers of the produce are straight away against you. Here in Amarapura we tried to work it through advances and then by improved technique but still the middlemen sellers of the finished article are strong.

Q. As regards your suggestion about a progressively decreasing fee for money orders, have you put it before the Director-General?—*A.* I put it before the local Postmaster General, and he said it was useless.

Q. You have heard nothing more about it?—*A.* No.

Q. Was that some years ago?—*A.* Five or six years ago. Remittance is one of our worst difficulties in Burma.

Q. That is, you want improved banking facilities generally?—*A.* Yes.

Q. With regard to general official administration you wish to see a civilian Development Commissioner?—*A.* Yes.

Q.—Might it not have the contrary effect to what you desire and be rather apt to hang up things?—*A.* You must have co-ordination between the Agricultural, Industrial and Co-operative Departments and it is better that that co-ordination should be in the hands of a man who has nothing else to do than that it should be done either by the Financial Commissioner who has a tremendous lot of other work to do or by the Secretary to the Government who is in similar case to the Financial Commissioner. The three departments work in with each other and such success as we have had in Burma is due to the fact that the Registrar and the Director of Agriculture have always worked together very closely.

Q.—Where would Forests come in? Would they be included?—*A.* I did not consider that. I think probably not.

Mr. C. E. Low.—*Q.* What is your idea of land banks? We have received evidence with regard to a land bank started in a small way in a certain district. Without reference to that, what do you think of the idea of having land banks?—*A.* District *land schaft* banks would be extremely useful.

Q. Would it not tend to increase indebtedness too much?—*A.* I do not think so. The banks would provide a counter attraction for investors and many persons submerged in debt would redeem their mortgages. Indians and Burmans in Burma having money always think of buying land and thus increase difficulties; instead of in land they would invest their monies in these banks on bonds and these bonds would be negotiable.

Q. Have you tried any scheme of making co-operative money secured on land liquid security.—*A.* You mean by bonds?

Q. Yes.—*A.* It is in contemplation now that the Central Bank and other central banks should have long term bonds. Either that must be done, or we must have what I think we have under consideration, district *land schaft* banks with possibly some better system of recovery. In order to get that you must have registered land tenures and what we really want is something in the nature of tke Torrens' system which they have in Australia.

Q. You do not believe in the system of recovery of the Egyptian Agricultural Bank?—*A.* No.

Q. Do you think it would tempt Burman money into industries if you had a sort of holding company started which would hold shares in a number of existing industries and spread out the risk and would also invest to a certain extent in new industries?—*A.* I do not think so, because the peculiarity of the Burman is that he likes to see where his money is. He would invest quite readily in concerns in the neighbourhood, but he has been temporarily scared by smashes in Rangoon during the last fifteen years from investing in things at a distance.

Q. Do you think the wider basis afforded by a holding company conducted by a fairly decent technical and business knowledge is too abstract a proposition for them?—*A.* I think so. If it were not so I think they would invest more in deposits in banks in Rangoon.

Q. You say that co-operative societies have succeeded in several cases in production and I think you mention somewhere the case of sleepers. Would you describe how they managed this sleeper business?—*A.* Up the Mu Valley Railway the business originally was in the hands of Indian contractors and they actually received about double of what they paid the producers. The difficulty is that nobody else there had any capital. The area concerned was a precarious tract for cultivation, and the cultivators through the local co-operative committees asked me to form a co-operative sleeper supply society to fell, saw, and cart sleepers and deliver to the railway company. I formed such a society and it did extremely well the first time. Last year more societies were made but they were not so successful because the railway was extra sticky about passing sleepers.

Q. What sort of security would this bank which you were mentioning to the President advance on?—*A.* Land to a certain extent which would scare the joint stock bankers. Land in Lower Burma is however practically negotiable. It would also advance on valuables, and on sureties—a sort of cash credit business.

Q. You speak of the way in which co-operative societies have linked up agriculturists with the Department of Agriculture. In what way have they done this in Burma?—*A.* Seed, for instance. There is a case in Pegu district. They have already got 20,000 baskets of a pure variety which was obtained entirely from a few baskets issued two or three years ago by the Agricultural Department.

Q. How do they secure purity while they are growing the seed?—*A.* They have a District Agriculturist in the place with a small farm who looks after their procedure. It is not absolutely pure but it is pure enough for the purposes of the buying mills.

Q. You say, "Our agrarian policy has led to the rapid increase of a landless cooly population." What is the policy exactly? How is it made effective?—*A.* When I say "policy" it relates rather to the way in which we have allowed things to develop—not our intentional policy so much.

Q. We have heard general complaints but we have not been able to get facts as to what Government could have done and is doing.—*A.* Government's effort in the past has been to retain land in the hands of the small peasant proprietor and it has made rules for that purpose.

Q. Regarding transfers?—*A.* Yes and areas to be granted or leased. Land which grows paddy for commercial purposes tends to get sooner or later into the hands of bigger people and the result is that the original pioneers tend to drop to tenants, that is why we have got colonisation schemes now—I should think 70 or 80 per cent. of the pioneers drop out as owners and they or others come in as tenants and there is a general drift downwards. The more intelligent or the more fortunate men thus amass land.

Q. You speak of pottery possibilities in Burma. You are perhaps aware that the Bombay School of Arts have been doing a number of practical experiments in pottery. You do not know whether anything has been done here to take advantage of their work?—*A.* I do not know.

Q. Turning to the question of forests, I understand that the idea is that the forests are largely exploited from the point of view of commercial timber by two or three individual firms who are expected to do all that is done or has to be done in the way of improving communications. That is, of course, one theory of forest development. Another theory would be that Government should itself do more in the way of communications and maintain rather different relations with the exploiting firms. Government might either run the thing to a greater extent departmentally or might charge the exploiting firms in consideration of the communications provided. Which do you think a better proposition purely from the financial point of view, from the point of view of profit and loss to Government?—*A.* If Government were to provide communications and the firms were to work the forests, I should think there is a considerable possibility of trouble. There will be complaints both ways. If a forest is going to be continuously worked Government might of course make roads or railways.

Q. Where you get a fairly large area of forest which is going to be worked continuously, Government might put down light railways?—*A.* Government might make communications.

Q. Are there any places in Burma where such steps could be taken with advantage and if so should the railway do entirely forest transport or try to take ordinary goods and passengers?—*A.* When you get near the forest there is as a rule very little in the way of goods and passengers. It is a rather vague question. It is difficult to give an answer, without knowing an actual case.

Q. Could you call to your mind any place in Burma at present where such a railway purely for forest exploitation purposes could be made to advantage?—*A.* I am not sure as to railways but I certainly think roads could usefully be made in numerous tracts.

Q. Not railways?—*A.* The sub-committee on communications was discussing roads for Tharrawaddy and Prome recently and the principle accepted was that a road which reaches the edge of the forest should be made by Government and paid for and maintained partly by the Forest Department and partly by the district or whoever desires the traffic.

Q. What about river transport?—*A.* How do you mean? Improving of floating channels? There again there is difficulty. It is difficult to answer that.

Q. Generally speaking, have you any idea that it would pay Government and bring in more revenue here if a different system of forest working were adopted from what you are seeing just now,—more departmental working and greater outlay by Government on communications?—*A.* I do not know personally, but I have been in close touch with a number of forest officers and I have been in big forest districts and I have always understood that the best opinion in the Forest Department is that Government could make very much more revenue by more departmental working with a much bigger staff which would certainly pay shortly if not at once, and by developing the thing generally. It is an undeveloped industry.

Q. You think that the Forest Department is at present understaffed?—*A.* There is no question about that. In research and everything else it is understaffed.

Q. Do you think that the Forest Officers should have more acquaintance with marketing and so on and a knowledge of the business side of forestry on their part is desirable?—*A.* I rather doubt the correctness of the idea that they are so utterly incompetent at marketing. They have got some extremely good men in the Forest Department. The criticism comes largely from the people with whom the marketing is done.

Q. Speaking about the chair of commerce you say, "There should be a chair of commerce in the coming university and diplomas in account keeping and commerce should be granted?—*A.* When I say "commercial education" the main thing is accounts. The Burman is perfectly ready and willing to keep accounts but he does not know how to do it.

Q. Would not a commercial school teach ordinary account keeping at present?—*A.* People go to the university and they can take that as one of the courses. That is a different thing from going and putting in your time and money into courses at a commercial school.

Q. If you mean a commercial college will the man from it go and keep accounts in a small rice mill?—*A.* He may certainly have to do that. Government appointments won't go round and the Burmans are not averse to commerce and industrial concerns. For co-operative auditing we want a larger staff and we have the utmost difficulty in getting men who know accounting.

Q. How many have you got?—*A.* I do not know exactly now. The department has auditing officers and there is also a big staff of society paid auditors and inspectors. It practically comes to the co-operative department teaching new hands from the beginning.

Q. Do you think they are inclined to turn up their noses at commercial schools?—*A.* A college education including commerce and accounts gives a man a wide range of chances in life. A course at a commercial school fits him for much less.

Q. Are there any regular examinations for them?—*A.* In the co-operative department, yes. The Registrar of Co-operative Societies holds examinations twice a year.

Q. In a province where the Director of Industries has to deal with larger things than cottage industries, do you think the idea of a Development Commissioner would work? For the development of big organised industries and his relations with them would it not be desirable to give the Director of Industries more direct access to Government?—*A.* In what way? I do not quite follow. Do you suggest that the rice milling business in Rangoon, timber mills and that sort of thing would be helped by the Director?

Q. I am not making a direct reference to any particular industry, but we have had suggestions made to us that Government should in its Industrial Department assist very materially big industries?—*A.* I should not have thought that was necessary. In talking of the Development Commissioner, I have been thinking of cottage industries. When I say that, I also mean the sort of small factory, for instance, silk and cotton weaving up to 1 lakh capital. It is quite likely that such a factory will be better run by a society or one man working with 50 or 60 or 100 workmen either in their homes or in his own compound. These are the sorts of things that I had in view—small mills, small ginneries and so on.

Q. Circumstances differ considerably in different provinces and what suits one province may not suit another?—*A.* I do not think that a Director of Industries who is dealing with the big industries of Rangoon would be necessarily a suitable person to look after cottage industries.

Q. If you had an Advisory Board of Industries, the people who could advise about big industries would be quite at sea in the case of cottage industries and *vice versâ*?—*A.* Yes.

Mr. A. Chatterton.—*Q.* Can you tell us anything about the development of industrial co-operation among the co-operative societies in Burma?—*A.* There are a lot of societies that finance small industries.

Q. Are there any doing industrial work, beyond financing?—*A.* There are the sleeper societies that I mentioned and there are stone metal supply societies.

Q. For instance, in connection with the handloom weaving which is going on at Amarapura, it appears that the co-operative societies took a hand in that?—*A.* Yes. That has been developing. Until recently the position of affairs has always been continually changing. It started with a few co-operators. Then it became a school and the co-operators dropped out. It is now experimenting with marketing. It has been in close touch all along with the numerous weavers, co-operative credit socie ties in the nighbourhood. We have, s far as I can remember, no definite productive societies apart from credit ones except sleepers and road metal supply societies.

Q. You say that the Saunders' Weaving Institute has certainly been a success. In what direction?—*A.* It certainly has improved the amount of fabric that can be produced with the same amount of labour per day.

Q. What we gathered from Mr. Hurst was that making proper allowances for the effect of the war he was not sure whether the weavers of Amarapura had been materially benefited. —*A.* I believe they would have been benefited.

Q. Have they been so? It is very difficult to come to a conclusion on that point in view of the effects of the war?—*A.* I cannot say definitely but they must, I think, have benefited. The amount of fabric per unit of capital and labour has increased with improved technique; but we are up against difficulties still. The middleman controls things to a certain extent still. Most of his business is done with the non-co-operative man who has no connection with the Institute, who are, still, more numerous than the co-operators.

Q. You say "Given a proper economic survey of such industries to base financing on the co-operative movement can therefore render great assistance." What sort of economic survey do you want of these cottage industries?—*A.* We want one man to take up several of them so that he views things from the same standpoint and then to work out everything from beginning to end of the industry and see how much money is required at the various stages to finance individuals. The Co-operative Department has no time to take up such enquiries

separately, and unless you know all about an industry before you begin to make societies and finance them you get into difficulties. Twice Government has appointed a man and kept him for about a month and then taken him away for something else.

Q. You would have a man who would know something about pottery?—*A.* Not necessarily. Merely an intelligent officer who can go fully into the thing and see where improvements in financing are required.

Q. He would be a mercantile expert?—*A.* No. He will investigate the sale processes and the means by which raw material is obtained, and consider improvements and when an individual requires loans he will see how much is required at each stage.

Q. You want this man to work under the Registrar?—*A.* Yes.

Q. And submit his report to the Registrar?—*A.* Yes, as a basis for the Registrar to take up safely the financing of societies made of these people.

Q. I suppose the amount of assistance you would render would largely depend upon the knowledge you have of the individual requiring to be financed?—*A.* The other members and the Co-operative Union will know about him. To quote an instance every district is settled by a settlement officer and he goes into the cost of production, the whole process, and what money is required at various stages, and on that we can make agricultural societies. In the same way I want something to go upon but I never had the time to go round and make these enquiries.

Q. Have they been completed?—*A.* The Kyaukmyaung pottery industry has been thus surveyed. There are now about three or four societies there of potters.

Q. Are they financing themselves or financed by a bank?—*A.* By the Mandalay Central Bank.

Q. I understand that you are in favour of some kind of land bank?—*A.* I think it is certainly a matter that should be gone into for various reasons.

Q. To get at the funds which you think are available amongst the people of this country, would it be possible for a financing society, more or less a bank probably, to guarantee bonds which people who wanted to avail themselves of the resources of the bank would be able to issue themselves—the bank to guarantee interest on bonds which the borrower would sell among his friends? It is a system which has very largely developed in certain parts of the continent.—*A.* You mean the German system?

Q. Yes. It is the German system—*A.* I think that is quite sound, but the idea would take some time to "catch on."

Q. The object of it would be to tap the sources of wealth which could not be easily got at by the bank itself?—*A.* Yes.

Q. One man may not be prepared to lend money to another but with the guarantee of the bank he may.—*A.* That is so. I do not think however it is necessary to go so far as that. If a bank was formed which was known to have a lot of good mortgages behind it, I think people would invest certainly in Lower Burma in that bank and the bank would have sufficient funds.

Q. They would deposit their money?—*A.* Yes, long term deposit. When I say deposit I mean long term negotiable bonds.

Q. Could you not make your fixed deposit receipts negotiable?—*A.* You cannot.

Q. Why not?—*A.* As far as I know under the Negotiable Instruments Act they cannot be negotiable. You will have to turn them into bonds.

Q. There is one other point which I should like to ask you about. That is about sugar. Is there much sugar grown in Burma?—*A.* A lot of sugarcane is eaten. That is a very common amusement and I believe there is a certain amount turned into jaggery.

Q. How is jaggery made? Is it by a very primitive process?—*A.* Some in iron mills and some in wooden mills.

Q. Are there large patches of sugarcane cultivation here?—*A.* Yes. There is a lot. Half way up from Rangoon, you will see such cultivation.

Q. Do you think there is any large field here for the development of sugar cane cultivation?—*A.* I have been told so by the agricultural people.

Q. Do any of these co-operative societies interest themselves in it?—*A.* A lot of the members grow sugarcane as a regular crop but I do not know beyond that.

Q. In those districts where sugar is more largely grown and more concentrated, are there any special societies dealing with sugar?—*A.* No. It is one of the rotation crops in Kyaukse and Pyinmana.

Sir F. H. Stewart.—*Q.* These colonisation schemes are for cultivation generally?—*A.* Yes.

Q. Or for any particular cultivation?—*A.* It depends on the area whether it is for paddy or not. In Lower Burma, in Pegu and Hanthawaddy paddy will grow and nothing else.

Q. Is Government doing anything in that way?—*A.* Quite a lot. There are two officers from the Commission on special duty on it. In Pegu and Hanthawaddy two forests have been disforested and thrown open to cultivation and placed under the colonisation scheme

which means making societies. You collect colonists and make co-operative societies from the very beginning and they are fully financed. The object is to prevent their being financed by money lenders.

Q. Has that colonisation scheme been sufficiently long in existence to judge of its success?—*A.* It has been going for the last 3 or 4 years.

Q. You think that it is a very good scheme?—*A.* Yes. I made it.

WITNESS No. 451.

MR. J. WATSON, *Partner, J. W. Darwood & Co. (Proprietors, Irrawaddy Match Company, Mandalay), Rangoon.*

WRITTEN EVIDENCE.

Statement on the Manufacture of Safety Matches in Mandalay.

We might preface these remarks by saying that in our case the contract for the machinery was carried out by a German firm who failed to make good the stipulated requirements as to training of staff and guaranteed output.

This has necessarily been a heavy handicap, but setting this aside the following brief resumé goes into other important aspects of the case.

In this statement we refer mostly to our match business in Mandalay and our experience gained in starting an enterprise entirely new to the province.

Industrial monographs.

We were encouraged thereto by the perusal of one of the Indian Forest Department Memoirs and we may here remark that the hopes held forth in that monograph have not been realised either in Burma or, as far as we know, in India.

As this is one of the first attempts on the part of the Government of India to furnish data with a view to encourage industrial enterprise and as the results have not been satisfactory we think it is likely to arrest further attempts and to cast doubts on the accuracy of the information supplied.

It therefore behoves Government to foster the industry and to see it placed on a satisfactory footing. As far as we can see this can only be done by admitting supplies of chemicals, paper, etc., into the country free of duty and the placing of a protective tariff on the imported article from countries other than the British Dominions.

Transport facilities and freights.

The business also suffers from the lack of communications and high railway and steamer freights and the impossibility of sending the product out of the country, even to India owing to high freights. There is a working arrangement between the Railway and Steamer Companies whereby all competition is eliminated. As an instance of the cost of transport, we have extracted pine timber in the Southern Shan States and the cost of freight to Mandalay from Kalaw exceeded all other costs paid on the timber, that is Government duty, felling, extraction, cartage to station and handling in Mandalay, etc. Freights from Mandalay to the east coast ports in India run to over 50 % of the value of the product.

It may be here mentioned that the two principal drawbacks against the success of a new enterprise in Burma other than those mentioned above are lack of and where found the high cost of fuel and the high cost of labour. The latter cannot be easily remedied, but the former where it is obtainable is made prohibitive. Upper Burma contains immense quantities of jungle woods and no harm but rather good would be done to the forests if timber only suitable for firewood could be cleared out, but owing to the lack of communications and the high freight this is impossible.

Financial assistance.

Banks will no doubt lend capital for new industries to approved persons or firms provided sufficient security is put up to cover the loan and the rate of interest is regulated by the money market. In starting new industries something more is required than the ordinary trade facilities for old established businesses and while we do not suggest Government help in raising capital there are other and more suitable ways in which this help could be extended.

We have not known the Burma Government to give any financial assistance to any industrial enterprise. We do not include the co-operative movement and railways in the term "Industrial concerns." While not in favour of Government advancing money for the establishment of new enterprises or the giving of bounties or the guaranteeing of dividends, we think Government might agree where necessary—

- To admit necessary supplies to the country free of duty.
- To place a protective duty in favour of struggling industries.
- To exempt these industries from certain forms of duty and taxation.
- To agree to purchase the product for Government needs.

Technical aid.

As an example of the difficulty of marketing one's product to Government we may mention that the Military Authorities purchased and paid for at a higher price than ours, Japanese matches. At that time our Lieutenant-Governor was using our matches and we were told

that our samples were not suitable for Turkish prisoners. Later we were again approached and we are now supplying the camps at Thayetmyo and Meiktila.

Under the conditions of aid given above there would then be little or no need for Government control or supervision. This control should be as limited as possible.

Technical aid.

In Burma that o' tainable is practically *nil* and might with advantage be extended. Government might well establish a laboratory furnished with up-to-date equipment and having a trained staff of analysts. Research work should be done at small cost and where the firm desires it the matter should be treated as confidential. The present Government chemical laboratory in Rangoon is quite inadequate to the needs of the province.

With regard to the sending abroad of Indian youths to gain technical knowledge we employed a native who had been sent by the Government of India or Bengal to Europe and Japan.

Calcutta Commercial Museum.

Our exhibit there has led to our receiving many enquiries regarding our products, but as we mentioned above even in pre-war time it was impossible to send goods to India owing to high freights.

Land policy of Government.

The factory is built on land leased from Government. The terms are no doubt reasonable, but in opening up rubber plantations, etc., land is granted free of rent for a certain number of years and we think a like concession might be extended to new industries.

Labour.

We had great difficulty in obtaining suitable labour. We had personally to train all our own work people and had difficulty in retaining the labour once so trained as the heavy work is done by natives of India who come and go.

As an example of the improvement of the condition of the people by the establishment of an industry such as ours, we may mention that the workers, particularly the women, when they came to us were dirty in their habits and persons but they soon became cleanly and their appearance reflected their prosperous condition.

Development of industry.

No organisation exists, other than Agricultural Co-operative Societies in Burma, for the development of industry, but we are hedged round with rules and regulations for control.

Development is not encouraged by Municipalities, who take up a hostile attitude to both public and private enterprise.

As an example of this attitude we may mention that all machinery within the limits of the Rangoon Municipality is assessed for taxation. With this example of short-sightedness on the part of the representatives of the Chief City of the Province before them smaller municipalities will be tempted to follow unless Government steps in and puts a stop to it.

tage industries.

We tried to assist these by placing an order for Shan made paper with the Assistant Superintendent, Loilem, Southern Shan States. He has done all he can to assist us, but the paper is not yet forthcoming.

Cottage industry would do a good deal for a city such as Mandalay.

Municipalities.

As mentioned above, do not assist in the promotion of industrial and commerical development. In a backward province such as this and where Municipal Government is also notoriously backward and self-centered it would be futile to expect encouragement from them.

Trade Marks.

Facilities ought to be given to register these at a central office say in Rangoon. This would assist business and save litigation.

Transport facilities, Roads, etc.

The lack of these in the Province is so notorious that there is no need to detail it. Railway and Steamer facilities are referred to above.

ORAL EVIDENCE, 31ST JANUARY 1918.

Witness gave confidential evidence regarding transport facilities and freights.

Hon'ble Sir R. N. Mookerjee.—*Q.* Under the next heading "Financial assistance" you say "In starting new industries something more is required than the ordinary trade facilities for old-established businesses," and you remark "there are other and more suitable ways in which this help could be extended." Are these enumerated below or have you anything else to add? What do you mean here by more suitable ways in which this help could be extended?—*A.* (1) To admit the necessary supplies to the country free of duty. (Imported materials form about half the cost of the finished article.) (2) To increase the duty on all foreign-made matches. (3) To exempt the industry from certain forms of duty and taxation. (4) To agree to purchase the product for Government needs. (5) To substantially reduce rail and steamer freights to enable the product to be marketed. (6) To render technical aid by means of a Government laboratory and the trained staff of the Forest Department. (7) To improve the means of communication within the province.

Q. You are not in favour of any direct financial assistance either by way of a guarantee of interest or lower rent for land, or anything of that nature?—*A.* As a special case financial assistance might be given but generally speaking I would not do that. I would grant lower rents when necessary.

Q. Then under the heading "Development of industry" you say that municipalities take up a hostile attitude to both public and private enterprise. Can you give any instance of such hostile attitude?—*A.* There is one particular point which I have put in my written

statement. This taxation on machinery in Rangoon is rather a serious matter; it affects us very badly. Our factory is nothing but machinery and if our machinery were taxed it would hit us hard. We disburse about Rs. 3,000 a month in wages. Such taxation on machinery is imposed in England but it is not done in Scotland or Ireland. It is not done either in Calcutta, Madras or Bombay.

Q. You mean special taxation by the municipality on machinery?—*A.* Yes, on machinery.

Mr. A. Chatterton.—*Q.* Are you talking of Rangoon or Mandalay?—*A.* Rangoon.

Hon'ble Sir R. N. Mookerjee.—*Q.* How is this taxation levied? Is it on the invoice or what?—*A.* It is levied on the assessment. It is assessed just in the same way as you assess land and buildings.

Q. It is levied just like municipal rates?—*A.* Yes.

Q. Without any reference to the invoice cost?—*A.* If you don't state what is your value, then they value it for you.

Q. What percentage do they charge?—*A.* I do not know at the moment.

Q. But that is very important?—*A.* I think it is pretty serious. I will send * information on the point to the Commission. We fought the case out, I may tell you, in the courts of Rangoon against this taxation of machinery, and we have lost that case.

Q. Could you let us know what is the percentage which the municipality charges?—*A.* I will do so.

Q. You brought the case against them and you lost your case on legal technicalities?—*A.* The whole thing was very vague, and the judgment said I think that it followed the English law. Machinery in Rangoon is not specially exempted as in the municipalities of Calcutta, Madras or Bombay. Not being specially exempted we could not win the case.

Q. Do not the Port Commissioners charge reduced port duty here for machinery?—*A.* We used to get it in free, but it is not so now.

Sir F. H. Stewart.—*Q.* I don't quite understand. These municipal regulations are in force in Rangoon: are they enforced in Mandalay also?—*A.* No. But I say that these points would tell rather heavily on us.

Q. How long has this match company been going on?—*A.* We have been running it about 5 years now.

Q. Why did you select Mandalay?—*A.* We were in the timber business in Burma and both our own experts and Troup's monograph led us to think that Mandalay was the most suitable site.

Hon'ble Sir R. N. Mookerjee.—*Q.* If you brought machinery say from England to Rangoon and instead of landing it there, you brought it to Mandalay by boat, would it in any way affect the situation?—*A.* No, this is a local taxation, just the same as taxation on land and buildings. It is only levied on machinery at work in Rangoon.

Q. Do you have that same taxation in Mandalay?—*A.* We are not taxed on machinery here.

Q. You have not had to pay taxation on machinery in your match factory?—*A.* No, our machinery is not taxed.

Q. Then what is your objection?—*A.* It might come here any day.

Q. It is only in vogue in Rangoon at present?—*A.* Yes. We are interested in machinery in Rangoon.

Mr. C. E. Low.—We had the same complaint in the Punjab.

Hon'ble Mr. H. Thompson.—*Q.* Is it not the fact that this is not a taxation on machinery, but is a taxation on land and that the machinery is taken into consideration in fixing the assessable value of the land?—*A.* That is so.

Q. This is a land tax imposed under the Burma Municipal Act which can therefore be imposed in any town in Burma?—*A.* That is correct.

Q. And the Rangoon municipality have taken the value of the machinery into consideration in determining the assessable value of the land?—*A.* That is so.

Q. It is a municipal tax imposed under the custom of the municipality on land, but in determining the assessable value of the land the value of the machinery is taken into consideration?—*A.* Yes. We fought it in the courts in Rangoon. The Lower Court gave a decision in our favour, but the Chief Court reversed it.

Hon'ble Sir R. N. Mookerjee.—*Q.* Because of legal technicalities in the interpretation of the Act?—*A.* Perhaps.

Sir F. H. Stewart.—*Q.* What were your reasons for starting this match industry in Mandalay?—*A.* If you read Troup's monograph you get the impression that Mandalay is the best site in the whole of India for match making.

Q. Does he mention Mandalay specifically?—*A.* Yes, and also our own experience led us to think so.

* See Appendix A printed after oral evidence.

Q. For what reasons?—*A.* Particularly for the timber supply.

Q. Couldn't you get a nearer source of supply?—*A.* Mandalay is also a distributing centre, and it is in the dry zone.

Q. Did you make any experiments of your own or did you take Mr. Troup's monograph as gospel?—*A.* We took it that the monograph was to a certain extent correct. We got the best expert advice in England as well.

Q. On what points did you get expert advice? It could not be about local conditions?—*A.* Certainly not on local conditions, but about machinery.

Q. What wood were you recommended? Was it *simul*?—*A.* Yes, *simul*.

Q. Are you using that now with success?—*A.* Yes. The point about wood is one that Troup made too much of. In one way the wood is not good, it is not so suitable for match making as the European wood, but the wood is only a small item in the whole value of the finished product. Imported materials form about half.

Q. You mean chemicals, paper and so on?—*A.* Yes, they form about half the value.

Q. Where do you get your labels from?—*A.* From Europe. (*Witness here gave confidential evidence regarding his factory.*)

Q. About trade marks you think that facilities should be given to register these at a central place, say, in Rangoon: would the registering officer have to enquire into your original right to a trade mark before he registers?—*A.* I am afraid he would.

Q. Is that a feasible proposition? You cannot enquire into all the trade marks? An unscrupulous person might try to register any number?—*A.* I would not put a trade mark on the market without registering it. The point is that there is a lot of litigation going on continually, there are always cases about trade marks and colourable imitations of them as they call it.

Q. Is that with reference to any particular trade?—*A.* I was not thinking of any particular trade. This point was one in your list of questions.

Q. The Burma Chamber has always expressed pretty strong opinions on this subject which have not coincided with those of other Chambers of Commerce, has it not?—*A.* I do not know. But in the case of match labels Sweden had a match which had a label with a cock and elephant. There is a Japanese match on the market now; and to the ordinary Burman it looks absolutely the same.

Sir D. J. Tata.—*Q.* With reference to what you said about the hopes held forth in Mr. Troup's monograph in answer to Sir Francis Stewart, what were those hopes which were held out?—*A.* He says that India is capable of match manufacture, and there is a good future for the match industry in India.

Q. Does he include Burma within India there?—*A.* Yes. He gives the advantages and disadvantages; the advantages outweigh the disadvantages, but the prospects must be admitted to be good; the advantages were that Burma had an abundance of suitable wood obtainable cheap, good river communication and a ready sale for the product. Against these the disadvantages were that labour was expensive and there was competition with Japanese matches. He said that Mandalay was the best site he could recommend and that a reasonable profit would be 25 per cent. on the capital invested. Later, a note of warning was issued by the Commercial Intelligence Department in 1914; the monograph appeared in 1909.

Q. What was the note of warning?—*A.* The warning was this: "The conclusions which Mr. Troup drew regarding the prospects of the industry in India, were optimistic, and since the publication of his note several new match factories have been started in India, notably one at Mandalay and one in the United Provinces whose fortunes will be observed with interest. It would be unwise, however, to underrate the difficulties which still beset the industry in this country. The question of finding woods entirely suitable for match manufacture cannot yet be said to have been finally solved and much detailed experiment in the treatment of Indian woods will remain to be done by those who are pioneering this industry. Chemical difficulties also attending the treatment of match heads especially in the rainy season cannot be solved except by actual experience and experiment. At the same time these factories and others which were previously in existence have demonstrated the possibility of making matches in India fully equal in quality to the best imported matches and there is reason to hope that in the match trade India may eventually become independent of foreign imports. The above considerations however indicate that there is considerable risk of loss in this as in other new industries if attempts were made to start companies on insufficient capital since the expenses of the first few years of work are likely to be heavy.

Hon'ble Sir R. N. Mookerjee.—*Q.* By whom was this warning issued?—*A.* By the Commercial Intelligence Department.

Sir D. J. Tata.—*Q.* You simply took the monograph about the suitability of the wood; and before starting your factory made no experiments with the wood to find out whether it would be suitable?—*A.* No. If there was a little more money in the business, we could select our woods better.

Q. You would have selected the same wood?—*A.* The same and other woods but treated better. It does not pay us to do so. For want of a little help we just missed making a

good match. The match is strong, but in its appearance it is not good. Witness here showed a sample match box to Sir D. Tata and other members.

(*Witness here gave confidential evidence.*)

Q. Another thing I want to ask you is about the municipality. Who form the members of the municipality here? Does the English population take any part in it? *A.* I should say that there are three European members out of a total of 12. I may mention one curious thing about the municipality. The revenue is going up every year in spite of all its troubles, but we have 30 to 40 deaths a day from plague, and enteric has been frightful, and the whole place wants cleaning up. These and other epidemics interfere very much with business and cause considerable loss.

Mr. C. E. Low.—*Q.* Can you point to any precise remarks in Mr. Troup's manual which were encouraging, or is it merely the general optimistic tone of it that led you to start this match factory?—*A.* He was not quite right about timber.

Q. Did he say definitely that it would be suitable?—*A.* Yes.

Q. Did he go into the question as to whether it would sell well?—*A.* He distinctly says "abundance of suitable wood, obtainable cheap."

Q. You know that the wood so far as match making goes is suitable, the only trouble is that the public do not like it?—*A.* It is not quite suitable, it is dark in colour.

(*Witness here gave confidential evidence.*)

Q. There was no experiment, so far as you know, carried out on what I may call commercial lines?—*A.* No. He said he made experiments in one or two match factories in India before; he talked in that way.

Q. Then regarding monographs on subjects of that sort put forward by presumably the best men under Government here at the time, do you think it is desirable that Government should issue information of that sort seeing that it might lead to losses and disappointments and might involve claims against Government?—*A.* I think Government should be very careful. After this experience Government should certainly be very careful.

Q. Careful in putting it more correctly?—*A.* Yes. I mean to say Mr. Troup makes a distinct statement about 25 per cent. minimum profit or something of that kind; but to say the least that was not borne out.

Q. And I suppose you would agree that such information should not be published unless it has been clearly borne out by some kind of commercial test?—*A.* You don't want to stop the people knowing possibilities.

Q. But the commercial prospects of a proposition, as apart from the technical aspects of it, should be supported, shouldn't they, by some kind of commercial test?—*A.* I think so.

Q. Merely to say that the timber is suitable is purely a matter of technical testing, but to say that it makes good matches, you must try it on a commercial scale?—*A.* Yes, I agree with you.

Q. Do you think that the absence of such commercial tests is responsible at all for the stagnation which existed before the war on the part of paper-pulp promoters in starting paper manufacture? I mean to say they were quite active in obtaining concessions, but none of them started to work them before the war although the thing had been in the air for some time; it is not merely a question of the war stopping it?—*A.* I should think so. The war had nothing to do with it.

Q. Supposing the thing had been done more or less on a commercial scale and the results had been favourable, you would personally have felt happier about it?—*A.* Yes, certainly so.

Sir D. J. Tata.—*Q.* You say something about Shan made paper under the heading "cottage industries." Is it suitable for your purposes?—*A.* It would be suitable for packing matches. You might pack the boxes with that. I might have sent you samples. I shall send down some samples tomorrow. It is a hand made paper. The Assistant Superintendent, Loilem, told us that it was a hot weather industry; when there is no work on the rice fields, they make this paper.

Q. From what? From the rice stalks?—*A.* They make it from pulp of some kind of wood, I could not tell you what. We gave him an order, I think, about a year ago, but we have not got the paper yet.

Mr. A. Chatterton.—*Q.* In regard to the competition of Japanese matches with locally made matches, do you know whether there is a place in Japan called Sweden? *A.* No.

Q. In the first paragraph of your note you say "the machinery was carried out by a German firm," was this one of the firms recommended in Mr. Troup's book?—*A.* I am not sure about that.

Q. You say they failed to make good stipulated requirements as to training of staff and guaranteed output. Does the machinery work all right?—*A.* No.

Q. Have you had to modify the machinery which we saw at work this morning?—*A.* Yes, very considerably.

Q. To make it work?—*A.* Yes.

Q. Was that done by a German or English expert?—*A.* First by a German, then by ourselves.

Q. This firm had already been operating in Northern India on a considerable scale?—*A.* I think so.

Q. Apart from the match industry, you say "cottage industry would do a good deal for a city such as Mandalay," what are you referring to there?—*A.* Home industries.

Q. What home industries?—*A.* I am not referring to any particular home industry, but I think in Mandalay, it seems to me, it is a place where home industries would flourish. The Burman likes to sit at home and do his work with his family; he would work early in the morning and late in the evening and sleep in the middle of the day; and if cottage industries such as weaving which they have now could be introduced, they would do a good deal to a city like Mandalay. It is not done in Mandalay, but Mandalay is a place which badly needs something brought into it as it has a very large population.

Q. You have no specific recommendations to make on the point?—*A.* I was thinking of our own experience more than anything. You saw this morning when you came to our factory the machines for filling matches into the boxes, how we had to take to hand filling and the way it is done, I mean by women with their children who sit round and work also.

APPENDIX A.

No. 1156—3, dated Rangoon the 8th February 1918.

From—Messrs. J. W. Darwood and Company, 7, Merchant Street, Rangoon,

To—The President, Industrial Commission, C/o The Secretary, Financial Commissioner, Rangoon.

Mr. Watson asks us to let you know what the tax on machinery in Rangoon is. We cannot do better than give you the case of the Power Station of the Rangoon Electric Tramway and Supply Company, Limited, the assessment for taxes on this is arrived at by taking 6 per cent. of the total value of land, building and machinery and the municipal taxes, general scavenging and lighting are charged based on this assessment.

We trust the above is clear.

Mr. C. G. Rogers.

Witness No. 452.

Mr. C. G. Rogers, V.D., F.C.H., F.L.S., *Chief Conservator of Forests, Burma.*

Written Evidence.

I.—Financial Aid to Industrial Enterprises.

Government Assistance.

The forms in which Government aid should take depends entirely upon the state of development of the industry in question.

If it is an entirely new one, Government should first make an exhaustive enquiry into the possibility of producing the raw material or manufactured product in sufficiently large quantities and at a cost which will offer a reasonable prospect of its being placed on the world's market with a reasonable margin of profit.

If a market has to be found for the raw material or manufactured product and there is any doubt as to the possibility of finding a market for the product, Government should put up a pioneer factory and work it for a sufficiently long period to prove definitely whether it is possible to find a place for the raw material or manufactured article in the world's market.

If a market exists for the raw product or manufactured article, Government might help the firms willing to raise capital to develop the industry in order to allow of their overcoming the initial difficulties in starting a new industry in one of the ways enumerated by the Commission in Question 5. The help should, I think, take the form of foregoing any royalty on the raw material required for a term of years and charging a reduced royalty for a further term of years.

If at the end of this second period the raw produce cannot be placed on the world's market unaided, the question of continuing the State aid or allowing the industry to disappear, will have to be decided on economic grounds.

Pioneer Factories.

Whether the pioneer factory should be closed or maintained permanently as a Government concern, depends upon circumstances. If capital is readily attracted to the new enterprise, and here is no need for Government to know the cost of manufacture of the article from the raw material in order to regulate the rate of royalty charged on the raw material, so as to allow of the State obtaining a reasonable share of the profit made by the companies, there would be no objection to the Pioneer factory being sold to a Company.

If it is necessary for Government to know the cost of manufacture of the article from the raw material to enable them to fix the rate of royalty, then it would be necessary for them

to maintain one or more Government factories in different parts of the country where cost of extraction differs in order to allow of their regulating the rate of royalty to be paid in different parts of the country.

Examples of Pioneer Factories or Pioneer Work.

(1) For working out the timbers of Burma other than teak and finding a place for them in the world's market.

(2) For manufacture of Turpentine, "Rusa" oil, collection of lac;

(3) Extraction of Teak.

Government enterprise should be limited to that required—

Limits of Government assistance.

(1) To ensure that Government gets a fair share of the profits made by the Company in the shape of royalty on raw produce.

(2) To prevent the establishment of a monopoly which will force up the price of the manufactured article far above the price at which it can be sold at a reasonable profit, to the exclusive benefit of the monopolist.

II.—Technical Aid to Industries.

Research abroad.

The provision for research for special subjects in the United Kingdom is, in my opinion, a necessary complement to Local Research.

The Local Research Institutes are in a position to collect full information as to the quantity of any raw product available and the cost of placing it on the world's market; but they are not in a position to compare the exact analysis of the raw products or the form of manufactured articles with those already on the market; to know the particular market on which they can be placed to the best advantage; the season of the year at which they will fetch the best prices; or the exact forms in which the raw material produced or manufactured article is demanded.

All this information can be best obtained by an institute or institutes in the principal markets of the world, to which the raw materials or manufactured articles are brought from many countries for disposal.

Surveys for industrial purpose

Very little is known about any timbers in Burma with the exception of teak and a few other species and practically nothing about over 90 per cent. of the timber-producing species of the Province.

Practically nothing is known of the minor forest products of Burma with the possible exception of cutch and lac many of which are capable of very large development.

Careful and detailed research work into both the major (timber) and minor forest products of the Province is one of the most urgent needs of the present day.

This research work must include a study of the sylvicultural requirements of teak and the principal timber-producing species of Burma as well as a detailed investigation into the imperfectly known or unknown minor forest products of the Province.

The survey should be carried out by a staff of selected officers of the Forest Department under the direct control of the Chief Conservator of Forests. At least 10 such officers are required at once and the numbers should be increased as the work of the survey develops.

The formation of a Provincial Herbarium where authentically named botanical specimens of all species found in the forests of the Province would be preserved and a Forest Economic Museum in which specimens of all raw minor forest products from different parts of the Province would be kept are both necessary and would be entrusted to the Forest Research Branch of the Forest Department. The main herbarium should be at Maymyo and the Museum; a small herbarium of all species of economic importance, in Rangoon.

Pamphlets should be prepared giving all the available information about all the economic products, which would be compiled and would be available for issue to enquirers by the Curator of the Economic Museum. In addition to these pamphlets, Forest Research Officers would prepare scientific publications on the same lines as those which have been prepared by the officers of the Forest Research Institute at Dehra Dun.

III.—Assistance in Marketing Products.

Industrial exhibitions.

Industrial exhibitions are of great value in making known the resources of the Province, and also in bringing to the notice of the cultivators and manufacturers, improved methods of cultivation or manufacture.

Industrial exhibitions should not only aim at bringing buyers and sellers into contact, but should be made popular in character with a view to making known to the general public as well as the business community, the wealth of the Province and the progress made in the machinery designed to convert raw materials into manufactured articles.

Government should certainly, for the present, organize Industrial exhibitions as it is more interested than any one in developing the resources of the country; knows a great deal more about the resources of the country as a whole than any other public body and can hold the balance true between rival interests.

Trade Representation.

So far as forest products are concerned, I feel very strongly that it is the duty of Government to take steps to extract the less known timbers immediately, and the more important minor forest products, as opportunity arises; to arrange for the maintenance of stocks and the institution of regular sales of such products for a term of years in order to endeavour to obtain a place in the markets of the world for the forest products of Burma.

The local demand for timber and other forest products is much smaller than the supply and the only way of fully utilizing these products, is to find a place for them in the markets of the world.

Private enterprise is not willing to take up this work on account of the large amount of capital involved in making markets for new products. These products are the exclusive property of the State and there can be no doubt that as soon as a market has been found for them, private enterprise will come in and undertake the development of the successful pioneer industries established by Government, on a scale which they would not be justified in doing. The State is in a position to risk the loss of capital which no private person or syndicate would consider themselves justified in doing unless they got very tempting terms or, in other words, unless there was a reasonable chance of making a profit commensurate with the probability of losing their capital and this means that if successful for years they would be enjoying more than their fair share of the profits of the successful venture.

IV.—Other Forms of Government Aid to Industries.

(*Witness here gave confidential evidence.*)

There is no objection whatever to giving the sole right to extract all available timbers from definite areas to individual firms at reduced rates of royalty so as to make it worth their while to put capital into the business and extract timber on a large scale. For the present, a demand exists for only a very small number of species other than teak and this necessarily increases the cost of extraction by decreasing the total volume of material which can be obtained from a given area. This points to the necessity of Government starting departmental extraction on a large scale and making a market for all the timber-producing species of the Province. Until this is done, it will not be possible to work the forests of the Province in the most economical manner. Until a market has been obtained for the great majority of the Burmese timbers only short term agreements for the extraction of such species as can be taken out at a profit should be entered into.

VI.—General Official Administration and Organization.

Cottage industries.

Samples of fibre from the stems of plantains sent to the Imperial Institute in London a few years ago resulted in the resulting fibre being valued at £27 per ton. An enquiry into the species of plantain from which the fibre was obtained, showed that the fibre was obtained from semi-cultivated plantains and that the fibre obtained from really wild plantains was much shorter and not nearly so valuable. Manilla hemp is obtained from a species of plantain (*Musa textilis*), the fibre being separated by a simple machine which could be worked by any villager. Plantain gardens are found in a very large number of villages; the stems of the shoots which have fruited are cut down and thrown away. The separation of the valuable fibre existing in the stem can be very easily effected by an inexpensive machine which can be made by any local blacksmith. The instruction of villagers in the actual method of the separation of the fibre could, I think, be undertaken by the Agricultural Department or by Co-operative Societies.

The rearing of silk worms is another cottage industry which promises well in Burma. This subject is, I think, at present under consideration of the Director of Agriculture.

VII.—Organization of Technical and Scientific Departments of Government.

For my opinion as to the formation of a special Research Branch in the Forest Department to help traders or manufacturers to get information concerning supplies of raw materials, please see my evidence under *Heading II.—"Technical aid to Industries."*

VIII.—Government Organization for the Collection and Distribution of Commercial Intelligence.

The issue of really reliable information by Forest Research Officers in the form of pamphlets, memoirs, etc., is of the greatest use to firms seeking for information about the forest products of the Province and should be developed as much as possible.

Special Monographs.

I would advocate making information on an important subject available at an earlier date by communicating it on printed slips to all the leading English and Vernacular papers marked not to be printed before a certain date, to allow of each paper being sure that the information communicated is not published earlier by some other paper.

Considerable delay in making known useful pieces of information will be overcome if this method is adopted.

All Forest Research publications should be on sale to the general public at the Provincial Economic Forest Museum.

IX.—Other Forms of Government Action and Organization.

The only forest product for which a Government certificate of quality might be established is cutch. So far as I know, pure cutch is prepared by the cutch boilers. This pure article is bought by Chinese middlemen who also buy other less valuable tannin extracts or adulterants and add these to the pure cutch before selling it in Rangoon. The only way of putting a stop to this nefarious practice is for Government to analyse consignments of "Cutch" offered for sale in Rangoon and to make it a general offence for a trader in cutch to be in possession of any of the products used for its adulteration. Certificates of quality.

(*Witness here gave confidential evidence.*)

Another most serious obstacle to the development of the valuable forests of the Province is the absence of roads and paths. The only way of getting over this difficulty is to get the principle of loans (with sinking funds for the recovery of the capital and interest within a term of years) for the construction of roads, railways, etc., sanctioned.

At present, all improvements to the forests are paid out of current revenue and so long as this principle is followed, it is impossible to get the money absolutely necessary for the development of the forests of the Province, which must result in a material increase to the annual revenues of the Province within a few years. Loans are raised for the construction of railroads and canals or embankments, made with a view of increasing the area under cultivation and I see no reason whatever why they should not be raised for the construction of roads and those buildings which are necessary to allow the work of the department developing normally. I refer to the residential and office buildings which must be constructed before the existing much too large Forest divisions can be split up into charges which can be properly managed and developed.

(*Witness did not give oral evidence.*)

WITNESS No. 453.

MR. R. E. V. ARBUTHNOT, I.C.S., *Commissioner of Settlements and Land Records, Burma.*

WRITTEN EVIDENCE. *Mr. R. E. V. Arbuthnot.*

I.—Financial Aid to Industrial Enterprise.

I consider that Government should pioneer industries—

(1) (*a*) by the establishment of experimental plantations to ascertain whether some form of agricultural or forest produce for which a commercial demand exists can be successfully grown or produced on a commercial basis; Government Assistance.

(*b*) by the establishment of pioneer factories to show whether—

(*i*) some raw product of which considerable supplies are available can be utilized industrially;

(*ii*) some product at present exported in a raw state can be treated industrially within the province on a commercial basis.

Experiments under both (*a*) and (*b*) should be carried out by Government on a small scale, and under the supervision of an expert, and should be confined to showing whether in the case of (*a*) the product can be successfully produced at a remunerative price and in the case of (*b*) whether a marketable article can be produced in sufficient quantities at a remunerative price. I consider it however preferable that where possible such experiments should be undertaken by private enterprise; the inducements which Government might offer to encourage or arrest such enterprises are in the case of (*a*) the grant of land on favourable terms as to assessment, including complete exemption from assessment for a term of years. In the case of (*b*) where the industry requires as its basis forest or other produce obtainable from land at the disposal of Government (1) the grant for a term of years (which should be sufficiently long to allow the industry if successful to establish itself on a secure basis), of a maximum quantity of the produce required either free of royalty or at a low rate of royalty; (2) in addition Government might undertake not to grant any similar concession for a term of years which should ordinarily not exceed 5; and (3) where necessary Government might grant a site for a factory at a favourable rent; (4) in special cases Government might also give money grants-in-aid towards the cost of any preliminary research or experiments which might be shown to be necessary.

II.—Technical Aid to Industries.

There is already in Burma a Forest Research Officer whose duties are mainly connected with the economic and industrial aspect of forest work including the collection and publication of information in regard to the kinds of timber suitable for various commercial or industrial purposes, the supplies available of the various kinds of such timber, investigation of the properties of different kinds of timber and of other kinds of forest produce, etc. I consider that Surveys for industrial purposes.

similar officers should be appointed to deal with the agricultural and mineral resources of the province in their industrial and commercial aspect. For agricultural produce this work is to a certain extent performed at present by the Director of Agriculture and his staff, but a special officer should be appointed to investigate the agricultural resources of the province with a view to their utilization for commercial or industrial purposes. His duties should include the collection of information regarding articles of agricultural produce already grown in the province for which there appears to be a possibility of creating a commercial demand, the investigation of new possible markets, and the introduction of new products not at present grown which if successful are likely to find a market. Similarly a Geological Officer should be appointed whose duties would be to investigate the mineral resources of the province with a view to their development. Although Government Geologists have visited Burma from time to time they have not nearly covered the whole of Burma and the mineralogical survey of Burma is far from complete. It should be taken up and completed systematically as soon as possible.

III.—Assistance in Marketing Products.

Commercial Museums

I consider that so far as this province is concerned a Commercial Museum should be established in Rangoon which should contain forest, agricultural and mineral sections under the control of the Forest, Agricultural and Mineral Research Officers whose appointments I have already suggested. Each of these sections of the museum should contain specimens of the various products including not only raw products but also specimens of products manufactured or industrially treated in this province. Each section should contain a complete library of all available reports, etc., and the available information as to any product should be tabulated on the card index system.

IV.—Other forms of Government Aid to Industries.

Land policy.

The rules contained in Chapters IV and IV-A of the rules under the Lower Burma Land and Revenue Act, 1876, and in Chapter VI and in VII-A of the rules under the Upper Burma Land and Revenue Regulations, 1879, for the grant of land for cultivation of rubber and other products are I consider generally suitable.

VI.—General Official Administration and Organization.

Provincial organisation.

I consider that a Director of Industries should be appointed whose duties would be to suggest measures to assist the commercial and industrial development of the province and to advise Government in all matters connected therewith. Ordinarily the Director of Industries should be an expert official. The officer most suited for the appointment will generally be a member of the Indian Civil Service of from 15 to 20 years' service, but the choice should not be restricted to members of the Indian Civil Service or of the Burma Commission, and any officer from any other department who is suitable should be eligible for the appointment. The pay of the appointment should be fixed on a basis to make it worth while for a man to remain for at least from five to seven years in the appointment. The Director of Industries should be assisted by an Advisory Board of Officials and Non-Officials. The Director of Industries should be the President of the Board of which the Forest, Agricultural and Mineral Research Officers should be members. The Director of Industries should consult the Board freely and keep the Board informed of his proceedings but should not be subject to the control of the Board. The Director of Industries should, at any rate so far as this province is concerned, be subject to the immediate control of the Financial Commissioner in the same way as the Director of Agriculture and Registrar of Co-operative Societies are at present. At the same time he should be given a free hand in matters of detail such as the entertainment of temporary establishment, the expenditure of money on experiments and the like. It will I consider probably be found necessary in the near future to appoint a second Financial Commissioner to deal with all matters relating to agricultural and industrial development, including the supervision and co-ordination of the work of the Director of Industries, the Registrar, Co-operative Credit Societies, and the Director of Agriculture leaving the first Financial Commissioner to deal with all matters relating to revenue, including Land Revenue, Salt and Excise.

(*Witness did not give oral evidence.*)

WITNESS No. 454.

Mr. James Smith.

MR. JAMES SMITH, *Manager, National Bank of India, Limited, Rangoon.*

WRITTEN EVIDENCE.

Financial Aid to Industrial Enterprises.

Q. 1.—No.

Q. 2.—From the existing banks and shroffs or Chetties.

Q. 2.—(*a*) If we can educate the native of India to entrust his savings to banks instead of hoarding or converting his wealth into gold and silver ornaments there would be an

immense increase in the funds available for extending and furthering the country's industries. Better education of the masses would contribute towards this. Unfortunately of late years Swadeshi banks, run by men of no previous banking experience, were allowed to spring up with the result that there were failures which further tended to destroy the public confidence. Recent legislation has, however, placed restrictions on such institutions.

Q. 3.—No.

Q. 4.—I have had no knowledge or experience of financial aid by Government to individual enterprises.

Qs. 5-9.—Except in very special cases such as Railways, Wolfram Mining and Agricultural experiments, I consider private enterprise should be allowed to develop naturally and not be bolstered up by Government assistance. Protection is fatal to individuality.

Qs. 10, 10(*a*), and 39.—The extension and development of Co-operative Credit Banks should receive encouragement from Government. The existing banks such as the Presidency, Exchange and Joint Stock Banks are quite sufficient to meet the demands put upon them. These banks are not slow to open new branches or extend their influence when any good opening presents itself. The native shroffs and bankers do an immense business in centres where the large banks have not opened.

The Banking Law at present in existence seems to be adequate.

(*Witness did not give oral evidence.*)

Mr. G. Blackstock

WITNESS No. 455.

MR. G. BLACKSTOCK, *Merchant and Partner, Messrs. Rowe & Co., Rangoon.*

WRITTEN EVIDENCE.

I.—Financial Aid to Industrial Enterprises.

In my experience there has never been any difficulty in raising money for Industrial Enterprises in this Province. Capital.

I do not think it is necessary to have any financial assistance from Government to promote existing or new industries. Government Assistance.

I have no experience of Pioneer Factories, but have an open mind with regard to these. Pioneer Factories.

So far as my personal experience goes, I have never had any difficulty in getting assistance from my own Bank to promote and increase my own business. Financing Agencies.

I have no experience of Co-operative Societies, but I believe, so far as this Province is concerned, Agricultural and Co-operative Societies are doing good work. Co-operative Societies

This point is answered under the heading of Government Assistance. Limits of Government Assistance.

II.—Technical Aid to Industries.

I have no experience of technical and scientific aid for promoting new industries, but it is generally acknowledged that such aid is now almost necessary for promoting and helping same. Technical Aid in General.

III.—Assistance in Marketing Products.

I have no experience of Commercial Museums, although I have no reason to think that the Museum in Calcutta does not meet a felt want. Commercial Museums

All these are good and so far as possible should be established for India and Burma. Sales Agencies, Exhibitions and Trade Representatives.

I think the principal Government Departments which use imported articles should publish a list of their requirements and merchants in India should have a chance of quoting for the supply of same. Government Patronage.

I know there is an agitation for a Trades Bank and one has been or is being established in London, but so far as my personal experience goes I have had no difficulty in borrowing capital from my own Bank. Banking Facilities.

V.—Training of Labour and Supervision.

I can only give you my views on the above so far as experience has been gained in my own business. Furniture-making is a Department in the business of Rowe and Company, Limited. It is found that Burmans can be easily trained to make furniture which would bear comparison with anything made at home. This training of course is under expert European supervision. The Heads of Departments in my business are all Europeans, but there is no difficulty in training Burmese, Chinese and Natives of India for the subordinate work of Salesmen, etc.

VI.— General Official Administration and Organization.

So far as this Province is concerned, no organization exists for the development of industries. A Board of Industries, I believe, would be welcome, but I have no views to offer as to how this Board should be constituted or its powers defined.

VII.—Organization of Technical and Scientific Departments of Government.

Under this heading my views are that Government generally should assist as far as it possibly can towards the development of the Province with reference more particularly to its mineral wealth and agriculture. The establishment of a Mines Department under Government for the exploitation of the mineral wealth of the country, I believe, would be a good thing.

VIII.—Government Organization for the Collection and Distribution of Commercial Intelligence.

All information from statistics with reference to the trade and welfare of the country is good and should be widely distributed.

IX.—Other forms of Government action.

Transport facilities. In this Province the great hindrance to the development of industries is the lack of communications. There are practically no roads. If communications were improved, I believe industries would spring up without any assistance from Government. Burma, no doubt, has magnificent waterways, but on account of the want of roads, produce has great difficulty in getting to the banks of the various rivers.

Jails. With reference to Jail competition, everybody in business with whom jail productions compete desire that it should be suppressed. I recognize, however, that jails must use the labour at its hand to the best advantage.

(Witness did not give oral evidence.)

WITNESS No. 456.

Rev. C. A. Nichols. REV. C. A. NICHOLS, D. D., *American Baptist Foreign Mission Society, Boston, Mass, U. S. A., Bassein.*

WRITTEN EVIDENCE.

Memoranda for the Indian Industrial Commission.

First as regards my personal connection with industrial interests.

In 1880 I took over charge of the Bassein Sgaw Karen Mission. This included the superintendence of the town school of about 150 pupils. It was a mixed school, about a third being girls. These resided in about 80 Christian Karen villages in the Myaungmya and Bassein districts. The support of the institution has always largely come from the voluntary contributions of cash and rice from the Christian Karen community and which enables it to receive all who come, irrespective of financial condition. The school is now of the High School grade and enrols anywhere from 700 to 900 in its ten standards.

The industrial element has, from the first, held a prominent place. About two hours manual labour daily is required, thus requiring a minimum of expense for the care of compound and buildings, the purchase, preparation, and serving of food, with steam cooking and electric lighting plant, executing all minor repairs on buildings, as well as a large percentage in the erection of new buildings; and, for a number of years, printing and publishing, including of course book sewing and binding, which were successfully carried on.

In 1888, acting upon the advice of a local European friend, a fully equipped 20 nominal H. P. steam saw mill plant was bought at a court sale and to this have been added a steam rice mill plant of about 30 N. H. P., in connection with the above and a branch saw mill on the west coast at Ngayôtgaung.

Not very long after the purchase of the saw mill property, outside job repairs were undertaken, skilled labour being available, as such had to be maintained for needed repairs to the mill itself. Later, a steel steam launch was built, as needed, others followed and

other marine craft, until about 20 of the former alone have been produced and have constituted not only a means of income but of training to our Karen young men, a fair number of such having duly qualified as fitters, drivers and assistant engineers, both stationary and marine.

Thus, the development of this industry, both directly and indirectly, has proved a valuable asset, both financially and technically, to our Karen Christian community, none of whom a few decades ago had had any mechanical training. Of course in the extraction of timber for the use of mills and for the supply of paddy there was found good business opportunities for a considerable number outside the actual employés of the mills, as well as in the disposal of the products of the plants.

The mill property was financed by voluntary contributions from our Karen Christian community at large, who had become accustomed by such co-operation by the maintenance of their religious and educational work, having been trained from the first not to rely upon funds from the mission society for the above purposes.

Most of the positions of responsibility and requiring skilled labour are filled by our Karen people, who are thus gradually gaining experience in other lines of effort than those simply connected with cultivation and in developing diversified occupations, which must be done if they are to hold their own with other races.

The property is owned by an incorporated society, composed of the contributors who have given outright the funds, the income from which goes to the High School, to be used for buildings, for current expenses or other, as may be decided by its trustees. These funds constitute one branch of our school endowment, started by Mr. C. H. Carpenter, my predecessor, possibly being the first example in the Indian Empire of an endowed educational institution where the funds were given chiefly by the people themselves.

No assistance has been asked for from the Government, although such help was apparently available, though many times it would have been of much value, but if accepted it might incidentally have led to less care being exercised in carrying on the business, if unduly relied upon.

In the matter of the Government aiding such industries in the line of facilitating securing markets for products of industry, it seems quite clear that such form of assistance would be of great value, without harm to any concerned.

Supply of raw materials.

As regards the supply of raw materials, it would appear that the Government could render much assistance at times, *e.g.*, by rendering as easy as might be practicable the securing of suitable supplies of timber from the forests, further details in regard to which might be suggested, if required.

Apprenticeship system.

Apprenticeships would seem to be more useful in general in the earlier stages of industrial development than attendance upon expensively equipped types of industrial schools in the west. The latter would probably be more appreciated and better utilized when conditions here more nearly approach those existing there.

Technical Assistance

As regards the assistance obtainable from the services of efficiency experts, who are now so much in demand "at home," I believe that such could be of great value in many lines, provided that ample time and patience were expended in becoming thoroughly acquainted with the people and difficulties involved in local conditions. Apparently the people, especially the agricultural people, pretty fully realize the need of such assistance and are quite ready to follow any one who will show them practical methods for increasing their profits. It may be noted that in some countries great benefit has accrued from occular demonstration of agricultural appliances and methods by travelling experts, facilities for the transportation of whom being provided free by railway and steamer companies who have found it to be to their interest thus to assist. Some companies are glad to also pay salaries and other expenses, as such action soon leads to considerable increase of business where they have operated. This method has resulted in the greatest success when schools have co-operated and when prizes have been awarded for the best yields, following upon action so suggested and so the whole community roused to more efficient methods. Of course the best results depend upon the tact and ability of the demonstrator and the chief difficulty would be experienced in finding him, only a very small fraction of such men being wholly dependent upon any given standard of examination.

Shipping freights.

The lowest possible would most naturally benefit any and every industry, to the remotest extent.

New industries.

As concerns opening up of new industries, it may be noted that, with the rise in the price of teak shingles, and the evident and growing lack of a durable, attractive roofing which might be available in this country, I was much impressed with the Japanese vitrified tiles, which would seem to be almost indestructible and which do not seem liable to lose their colour. These would be almost an ideal article and it would not be at all difficult to manufacture them at reasonable prices here, as the Burmese are already accustomed to do very good glazing on their water jars. As to how their manufacture could be brought about, as to whether a lighter type would be advisable, etc., are matters of detail, to be determined as may be required.

(Witness did not give oral evidence.)

WITNESS No. 457.

MAUNG HTOON CHAN, *Advocate, Akyab.*

WRITTEN EVIDENCE.

Agriculture.

Importance of paddy cultivation.

Paddy is the main crop in Burma, and on it depends the welfare of the people. It is still more important in Arakan where paddy and rice are practically the only crop exported. We have no manufactures or industries worthy to speak of, and those that exist are only to meet the needs of local requirements. Paddy is the root, whereas other trades, industries, and professions are only the trunk, branches, and leaves of a tree. The whole country does not feel the injury done to any one trade, industry, or profession, but if the paddy crop fails, either owing to drought or other causes, the whole country is withered in the same way as a tree whose roots are injured. The importance of agriculture cannot be overrated in Arakan, and on the successful cultivation of paddy depends the happiness and the prosperity of the people.

Primitive methods of ploughing.

The soils in Arakan may be classified as black loamy soil, sandy soil, and clayish loamy soil. The black loamy soil is more abundant than any other kind, and the country is more fit for paddy cultivation than any other crops. Jute can be grown with advantage also, but its cultivation is now confined to a small area. Paddy is the crop grown all over the country and the prevailing method of ploughing is primitive.

It is done with a wooden plough having a somewhat pointed iron as the plough-share. In hard ground cattle can hardly drag the plough, and in consequence the cultivators wait till the rains have fairly set in to make the ground wet and soft. Ploughing is usually done in the months of June and July. The soil is turned over with a plough four times and the process of "Kyan" or harrowing is repeated three times. After the first ploughing, the second ploughing is done with having the furrows at right angles to the first. The clods are then broken and levelled with a "Kyan" which consists of three parallel bars of wood, having a length of 4½ cubits, fastened together with four cross bars of a cubit in length. The ploughman sits on the "Kyan" drawn by cattle which are driven to every plot of his field and the clods are thus broken up. Ploughing is done again for the third time and levelling with the "Kyan" is repeated—and the same process is observed for the fourth time—a great deal depends on the nature of the soil, it may be done twice only when the ground is soft and rich in manure. The grass and other plants are weeded out and instead of being thrown away they are trampled down right to the bottom of their fields and pebbles and stones are carefully removed. The ground is now ready for sowing. This is done in the month of July and August. The seed has previously been selected, dried in the sun and carefully stored. At the time of sowing sufficient quantity for a day is taken in a basket and soaked in water for 24 hours. The baskets are then taken out from water and kept suspended for another 24 hours. Paddy is then washed and covered up with leaves and grass and kept to dry in baskets for 24 hours. Cold water is now applied and covered up in the same way, shoots begin to sprout out and then sowing is done by throwing the seeds broad cast. Ploughing and sowing go on side by side, and when a field is ready sowing is done without delay.

The cultivators daily watch their fields and observe the gradual growth of the young plants removing the weeds here and there. The early crop or "Koukyin" gets ripe in September and October, and this crop is soon cut and consumed. The middle crop or "Kouklet" ripens in October and November and the late crop or Koukgri in November and December. Reaping is done in November and December and all is finished in the early part of January. The sheaves of paddy are taken to a high plot in the field conveniently situated and thrashing is done by having the grain trodden out by cattle. Winnowing is done by throwing the paddy from a scaffold or from a man's height with raised arms, depending on the daily breeze which blows either from the south or north. The average produce of paddy per *Doon*=6·40 acres is from 500 to 600 small baskets, 100 of which is equivalent to 36·78 of Government standard 9-gallon baskets. The wages are high and the cost of cultivation per *Doon* amounts to 300 or 400 small baskets, including payment to servants and making due allowance for seed grain, hire of cattle, land and consumption of food. At the end of the season, the cultivator finds that he has made a profit of only about 200 small baskets per *Doon*, which is hardly sufficient to support his family and pay for the cultivation of the next crop—and in times of drought and bad years, he loses heavily. He gets into debt and is seldom free from the clutches of money lenders. His position is deplorable under the existing conditions. The pinch of poverty is rather acute and his lands are gradually passing away into the hands of money lenders and non-agriculturists.

Defects of the present method of cultivation.

1. *Plough.*—A wooden plough fixed with a piece of iron at the end as plough-share, it is blunt and cannot be used to plough hard ground, with the result that the cultivators have to wait for the rains and commence ploughing in June.

2. Sowing is done broad cast after shoots had come out in the seed grain in the months of July and August. The paddy fields are full of water at the time and the seed grain must be thrown broad cast and no other method can be adopted. And to prevent the seed grain being either washed away or become rotten in water, it is necessary to have seed grain with shoots sprouting out so as to catch the ground as early as possible. Young shoots come out quickly and grow out as the plants are in water, which keep them buoyant, the roots remain above ground, with the result that when the plants have grown sufficiently high, they become top-heavy and a blast of wind is liable to fell the crops as the plants are not deep-rooted in the ground, causing great damage by producing thrash out light or dead paddy.

3. Late sowing in July and August is to be discouraged. The paddy plants are not properly matured at the time when in ears, they had not enjoyed the full period of the rains, and only a few plants had come out from each seed grain. The yield becomes less with a tendency to thrash out light and bumper crop becomes illusionary.

4. The ploughing has to be finished either in July or latest in August. They force their plough cattle to work nearly the whole day without proper food and rest. An interval of two to three hours at noon to graze in the neighbouring lands with hardly any blade of grass is not feeding at all. The cattle are over-worked, their bodies become lean and emaciated and many of them die after ploughing, and they are also liable to become an easy prey to cattle disease. As time is limited, ploughing and sowing are hurriedly done and cultivators do not pay much attention to these important operations.

5. That as the fields are full of water at the time of ploughing the clods of earth are not properly turned up and only furrows are made on the ground due to the defective form of plough used. The underpart of the surface soil is hardly ever exposed to the influence of the sun and air. The soil is dissolved in rain water which washes away a quantity of plant food and as remedy for this "*kasins*" or small bunds are made with the object of retention of water in the fields and of prevention against plant food and seed grain being washed away.

Improved methods now being tried.

Finding that the yield with the present primitive method hardly pays the expenses of cultivation and leaves no margin for the cultivators, experiments are being tried with a view of producing an abundant crop to the extent of 1,000 baskets of paddy per *Doon* (6·40 acres). If successful it would indeed be a great blessing to the cultivators. The new method is known by the name of summer ploughing. The existing plough being not suitable, they use a sharp plough, some prefer the plough known as the Indian plough, but others use the Meston plough, which is much lighter than the Indian plough. The ploughing is done in March, April or May. The ground is hard, but the plough being sharp, cattle find no difficulty in dragging it. Two ploughings are done, the furrows of the second ploughing being at right angles to the first—and the "Kyan" is applied, the clods are broken up and the ground made level and smooth. If the paddy fields are fresh water fields where no brackish or salt water ever reaches, then sowing is done with dry seeds throwing them broad cast after which a third ploughing is done to get all the seed grain buried in the ground which is then left exposed to the influence of the sun and air. A few showers in May cause them to germinate and young plants shoot out—and in June the young plants are about a foot high and quite healthy, one seed grain giving out already about 10 plants, and at the end of the rains, the plants from one seed grain would number about 50 to 60 forming into a bush. The plants are strong and healthy, crops are abundant, grains are matured, thrash out light or dead paddy negligible.

The process is slightly different if the fields are those innundated with salt water in the high tides of March and April. After two ploughings and the application of the "Kyan" once as stated above, and exposure of the soil to the influence of the sun and air, the cultivators have to wait for the showers of rains in May and June—and when the salt is sufficiently washed away from the ground, a third ploughing is done and "Kyan" is being applied and sowing is done with seed grain soaking them in water for a day—and young shoots soon come out in June and the crops are good and the yield is also abundant.

The advantages claimed by summer ploughing.

1. The ground is better prepared, as the ploughing can be done in the three months of March, April and May—and the soil is brought more under the beneficial influence of sun and air, which improve the soil.

2. The soil being upturned, the grass and all kinds of weeds get dried up by the heat of the sun and when the rains set in, before the weeds have time to recover, the young paddy plants shoot out and outgrow them and the weeds naturally die.

3. The paddy plants have the full benefit of the whole period of the rains and they become very healthy and strong producing a bigger yield with matured grains.

4. Plough cattle are not over-worked and ill-treated, as the ploughing is done only for two hours in the morning (6 to 8 A.M.) and for 2 hours in the evening (5 to 7 P.M.) and extended, if necessary, for any period in the months of March, April and May.

5. That the roots of the paddy plants are deeply imbedded in the ground, and although

each bush may contain 50 to 60 plants, they do not become top heavy and strong wind cannot fell them, being deep rooted in the ground.

6. The yield is abundant averaging 1,000, small baskets to 1 *Doon* (6·40 acres), of land.

7. The plants being strong and healthy have a better chance of withstanding the effects of strong wind and of drought in August or failure of later rains in October. The above remarks cannot be appreciated without saying a few words regarding the rainfall in Arakan. It is a wet country having an average rainfall of 200 to 240 inches a year. Rainfall is more copious for the lands close to the sea shore than the uplands, but no part of the country can complain of the want of rains. From January to April rainfall seldom registers more than 5 inches, although the month of May is fairly wet, yet the rains properly commence only about the first week of June, July and August are the months of heavy rain, which gradually decrease from September to October and entirely cease in December.

Government aid urgently needed.

1. The extension of Co-operative Credit Societies to Arakan. Although the people have some ideas of Co-operative Societies, yet they are wanting in co-operation owing to ignorance. With the spread of education, suitable explanations and Government control, the movement is bound to be popular and soon become an unqualified success.

The agricultural loans given by Government are not popular, the individual advances are not large enough and there is more trouble and expense in obtaining them.

That the cost of cultivation for producing one crop in the Akyab District would be large, and the cultivators to defray all expenses annually borrow from the various money lenders to the extent of about 50 lakhs, on Promissory Notes, pledge of gold, and on mortgages of land bearing interst from Rs. 1-4-0 to 5% per month.

2. Agricultural schools and experimental farms. An agricultural school and an experimental farm should be started without any delay at Akyab. It is evident that school education in the principles of agriculture is guiding the minds and habits of youth, yet the adult at practical work requires other kinds of help and teaching. Experimental farms are required not only for the students but also for adults, to teach them by demonstration the problem of local farming and to convince them by successful results the truth of the teaching and the superiority of the methods employed.

3. The necessity for the Township officers to attend a course of lectures in agriculture. A powerful impetus can be given by Government to make the acquisition of agricultural knowledge popular to bear a beneficial effect on agriculture by requiring the selected candidates to attend a course of lectures for a year in an agricultural college or school. No candidates are to be given in charge of a Township without having a certificate to that effect. This rule should be brought in force immediately. Government service is most popular amongst the people, all educated young men readily join the service. It gives them influence and power, for as Township officers the people look to them for advice and guidance. Being invested with magisterial powers they are the most influential people in the district. They go out on tours as Township officers and come into contact with the people of their township. They inspect the country and often are engaged in crop cuttings. They see every day how the cultivators plough their lands and sow their seeds and how they look after their cattle. In times of cattle disease they have to visit the infected areas, and they can more intelligently enforce the rules of the Veterinary Department and appreciate the duties they have to perform in looking after the welfare of the people of their township. Their directions as to how the ploughing is to be done, seed grain sown and in what manner the cattle are to be looked after would soon be obeyed by the people—and would be also a powerful means of enlightening people in the knowledge of agriculture—and checking defective methods the agriculturists are adopting at present.

The reasons why Government aid is needed.

1. *Manure.*—For want of knowledge the use of valuable manure is neglected.

Agriculturists know from experience that the thrashing grounds and the plots of land where cattle had been tied up in the previous year give them a much better outturn than the surrounding fields, yet no attempt had been made to collect the cattle manure. At present it is difficult to do so as cattle are allowed to sleep anywhere they like during the dry season. The erection of cattle sheds would be a great improvement both for the collection of cattle manure and for bringing up and looking after cattle. At present cultivators are satisfied with the manure the ground possesses, consisting of the decayed remains of vegetable matter such as stubble, roots, leaves, grass and other weeds that have been ploughed under and the droppings of animals, birds and fowls. In some places the soil is enriched by deposits of alluvial silts brought down by the swollen rivers which inundate large tracts of land. Nature has made the ground fertile in many places, but skill and intelligence are required to produce a bumper crop. The use of chemical manures are unknown and bone meal is never prepared nor used.

2. *Cattle*—With the increased area of cultivation the number of cattle have also increased. At present there are 874,000 acres of culturable lands in the Akyab District, of which 707,563 acres are under cultivation.

The following statistics called from the settlement report are of interest :—

		1901-02	1913-14
Plough cattle	i—Oxen	50,446	105,576
	ii—Bull buffaloes	37,196	57,569
	iii—Cow buffaloes	26,747	50,218
	Total plough cattle	114,389	213,362
Other cattle	i—Cow	47,023	93,710
	ii—Young stock	83,221	92,842
	Total other cattle	130,244	186,552
	GRAND TOTAL	244,633	399,914

The statistics for the years 1914-15, 1915-16 are not available, but the cattle have increased considerably above the figures given for the year 1913-14.

The oxen and cows are small and puny and a better breed should be introduced. This would be done if Government has taken the question in hand.

3. Grazing grounds reserved are insufficient.

	1911-12.	1913-14.
(*i*) The area reserved as grazing ground	68,416	98,081 acres.
(*ii*) Occupied fallow land used as grazing ground		90,697 ,,

The area reserved as grazing ground works out at the rate of two head of plough cattle or four head of all cattle per acre reserved and the cultivators keep by large area of occupied lands for grazing purposes assessed practically at full rates. The want of sufficient grazing grounds is now keenly felt by the cultivators, many of them have to send away their cattle to the hilly places where grass can be obtained and others graze their cattle in the occupied lands, left fallow for the purpose—only a few of them whose lands are not far from the reserved grazing grounds, graze their cattle regularly. The grazing grounds being insufficient, every blade of grass is soon eaten up after the ploughing is over, and the owners knowing the scarcity if all cattle are sent to the reserved grazing ground make their own arrangements for grazing their cattle.

(*ii*) Crops for fodder can be grown with advantage in places where paddy cannot be cultivated. No such crops are ever grown in Arakan.

(*iii*) Straw-stacks-cattle can be fed on straw. Negligent wastage of straw through ignorance should be prevented—and stacking of straw should be enforced—as at present straw stacks are only a few to be found generally in Chittagonian villages. Serious notice should be taken of wanton and michievous destruction of straw by fire. Agriculturists do not as yet realise the importance of straw for feeding cattle.

In the months of January, February and March, as grass is scarce, all cattle eat straw, but as soon as fresh blades come out in the early rains buffaloes refuse to be fed on straw, whereas cows consume it throughout the year.

(*iv*) Bran or rice-meal is a favourite food with cows, but buffaloes are not fond of it—and bran is not used as fodder, although a large supply can be had from the mills at Akyab. With the increase of ploughing in summer, more bran would be utilised than at present. Oxen are preferable to buffaloes for dry weather, but in the rains oxen can hardly drag the plough and soon get exhausted in mud.

(*v*) Agrilcultural education is much more important to a country such as Arakan which depends for its prosperity on the successful cultivation of paddy. It is by agricultural education alone that the cultivators will come to learn the importance of the different kinds of manure and of feeding and breeding cattle and the thorough preparation of the soil for sowing and the measures adopted for prevention of cattle disease, for destruction of insects and pests and for protection against drought.

(*Witness did not give oral evidence.*)

WITNESS No. 458.

MAUNG SHWAY THA, *Bar.-at-Law, Managing Director, Messrs. U. Rai Gyaw Thoo & Co., Limited, Akyab.*

WRITTEN EVIDENCE.

Agricultural products.

Paddy. The chief agricultural product of Arakan Division is paddy. The method of cultivating the lands has not altered; the cultivators still follow the primitive way of cultivation. I attribute this cause to the ignorance of the people, so, therefore, the Government might advise them to adopt new methods, and for this purpose experimental farms should be established in each district. As far as Akyab District is concerned, the cultivators raise only one crop; but in some places it is possible for them to raise two crops, *i.e.*, in places where fresh water is available, and for the cultivators to carry out this, it would be necessary for them to have pumping machinery; this they are unable to do for want of funds. Government might set up pumping machine and charge the cultivators.

Manure. The fertility of the paddy lands is getting exhausted; so far as I am aware, the cultivators do nothing to fertilize their lands. There is a continual complaint from the cultivators that their outturn is getting reduced year by year; to remedy this, I would suggest that Government should introduce some kind of manure and distribute amongst the cultivators at actual costs.

Paddy Rates. The paddy market at Akyab is controlled by demand from India. The cultivators are ignorant whether there is any demand from other countries or not; commercial newspapers in the vernacular might be of some assistance to them in keeping them informed whether there is a demand for paddy from other countries, so that they can hold out and obtain best possible rates.

Plantain, sugar-cane, coconut, sesamum, cotton and mustard-seed are also minor products of this district. Sugar-cane cultivation might be encouraged.

Toddy-palm or Dani. This palm is extensively grown on the banks of rivers and creeks. The people extract this juice under license from the Government; before the juice ferments, it is sweet. The natives make jaggery from this —an experiment might be made to manufacture sugar.

Forest products.

Bamboo. Bamboo in this district covers large areas of land; paper manufacture from bamboo should be encouraged, provided all the materials are obtainable.

Benefits of railway communication.

(1) To improve paddy trade and other industries.

(2) To reduce wages of labourers and price of food-stuffs.

Jail competition.

Jails should not be allowed to compete with the public—all their production should be utilised for State purposes.

(*Witness did not give oral evidence*).

WITNESS No. 459.

Maung Ba.

MAUNG BA, *Mahlaing Cotton Mill Company, Myothingyi, Mahlaing.*

WRITTEN EVIDENCE.

Capital. *Q.* 1.—I have experienced difficulties in raising capital for industrial purposes. The difficulties solely concern the raising of capital. To remove these difficulties the following suggestions are submitted :—

(*i*) formation of societies;

(*ii*) grant of loan from banks; and

(*iii*) grant of financial aid by Government in some way or other.

Q. 2.—In Upper Burma, capital is generally raised by borrowing the sum from Chetties at a high rate of interest.

Q. 2(*a*).—The other methods by which capital may be drawn are —

(*i*) by constituting co-operative societies;

(*ii*) by getting loans from banks through the help of Government;

(*iii*) by receiving financial aid from Government in some way or other.

The above sources will enable the people to undertake industrial enterprises with ease.

Q. 3.—I have never undertaken such enterprises.

Q. 4.—I have had no experience of it.

Q. 5.—I think existing and new industries should receive Government aid as follows :— Government Assistance.

(*i*) I am in favour of the grants-in-aid ;

(*ii*) I approve of the grant of bounties according to the kinds of industries ;

(*iii*) the money should be refunded to Government in view of their guarantee ;

(*iv*) loans with interest should be given ;

(*v*) the aid should be on the hire-purchase system ;

(*vi*) part of capital should be provided by Government ;

(*vii*) if financial aid is obtained I agree to the purchase by Government of products for limited periods ;

(*viii*) I am in favour of the assessment of income-tax on the profits of undertakings according to their classes for a limited period and an industry or articles used in an industry should be exempted from payment of any tax.

Q. 6.—If Government assistance is given to the above methods they require Government control and if they are under Government control an auditor should be appointed.

Q. 7.—I have had no experience of it. Pioneer Factories.

Q. 8.—Government should give assistance to new industries in Burma to enable them to manufacture—

(*i*) different kinds of cloth from cotton ;

(*ii*) sugar or jaggery from fresh palm-toddy ;

(*iii*) different kinds of soap and dye from soap-sand.

Q. 9.—In undertaking any industrial enterprise, difficulties arise owing to the insufficiency of capital, *e.g.*,—people are unable to manufacture cloth from cotton and to extract oil from cotton-seeds for want of adequate capital ; these industries can be carried on if they are financed either by Co-operative Societies or by Government. Financing agencies

Q. 10.—Existing or new banking agencies should give financial assistance to industrial undertakings with or without guarantee subject to suitable conditions.

Q. 10(*a*).—If industries have dealings with banks there should be a banking law.

Q. 11.—I know of no industries which have been developed by the assistance of Co-operative Societies. Co-operative Societies.

Q. 12.—There is none.

Q. 12(*a*).—In the interests of commerce, facilities should be given with a view to increase the trade in Burma as in other countries.

Q. 19.—Demonstration factories for any industry should be adopted in Burma. Demonstration factories.

Q. 24—Yes, it should be adopted. Research system.

Q. 31.—It is advisable that there should be industrial exhibitions.

Q. 32.—It is proper that they should be held by Government. Industrial exhibitions.

Q. 37.—The principal Government Departments should exhibit in museums the Foreing articles they use or publish lists of them. Government patronage.

Q. 39.—To give facilities in marketing indigenous products assistance should be given through banks, societies or new agencies. Banking facilities.

Q. 44.—I think commercial growth is hindered owing to the lack of education. Lack of education.

Q. 47.—The Province is benefited by the establishment of these schools. Industrial Schools, and apprenticeship.

Q. 48.—Both the systems are good.

Q. 50.—In my opinion it is better that industrial schools should be under the control of the Department of Industries.

Q. 71.—Institutions should be established. Technological institutions.

Q. 78.—It will be a good thing to have a library where works of reference both in English and Burmese are available. Reference libraries.

Q. 80.—The establishment of a College of Commerce is necessary and it should receive Government aid. College of Commerce.

Q. 81.—It should be established at Rangoon or Mandalay.

Q. 85.—Government should either establish or assist journals. Trade Journals.

Q. 86.—The proprietors of journals should publish industrial matters for general information.

Q. 112(*b*).—Government should assist these industries all along—from the time the cotton is grown till the cloth is manufactured ; from the time the silkworm is reared till the silk passes through the loom as different kinds of wearing apparel ; and from the time the sugarcane is cultivated till sugar is made. General.

(*Witness did not give oral evidence.*)

WITNESS NO. 460.

THE PROVINCIAL INDUSTRIAL COMMITTEE, BURMA.

WRITTEN EVIDENCE.

Industrial Development in Burma.

In an examination of the measures which can be taken for furtherance of industrial development in this province, I shall distinguish between—

(*a*) large industries, and

(*b*) minor or cottage industries.

Under the former head I include the industries in which mechanical power is employed in the processes of manufacture or which require the employment of a body of skilled and unskilled labour working in co-operation. Under the head of minor or cottage industries I place the minor industries which can be undertaken by a man and his family, or by a small body of men working together and which do not require the employment of any large amount of capital or of highly skilled supervision.

2. My reason for making this broad distinction between the two classes of industries is that the measures of Government support needed by large and cottage industries will be found on examination to be different in their nature. When a large industry has been established and has proved itself to be commercially successful, no assistance on the part of Government is ordinarily needed to ensure its further development. Capital can be obtained in the open market sufficient to finance undertakings which have been proved to be successful, and the persons or firms engaged in such industries are in a position to secure the skilled and technical staff needed for management and control. (I am writing both here and elsewhere in this note with reference to normal pre-war conditions. The difficulties which have arisen since the outbreak of war both in obtaining capital and in securing skilled supervising staff may be expected to disappear after the end of the war.) The aim of Government in its relation to large industries should be directed rather to the encouragement of new industries which give promise of success but which have not yet been tested on a commercial scale. The attitude of financiers and businessmen in the East towards any new departure is distinctly conservative, and the country may possess possibilities in the way of raw product or other advantages for the establishment of some new industry which will remain undeveoped from year to year unless some encouragement or assistance is given by Government in the initial stages of the industry.

3. With minor or cottage industries the position is rather the converse. The people engaged in these industries are ordinarily of the poorest classes with little or no capital of their own and they are compelled to borrow at high rates of interest, which absorb the whole of their profits and leave them no margin from which to better their position. Their poverty precludes them from obtaining advice as to the directions in which they can improve their implements and methods of manufacture and as to the best markets for purchase of raw materials and sale of the manufactured products. The measures to be taken by Government in relation to these small industries should be directed to the support and development of existing industries rather than to the establishment of new industries. Assistance is chiefly needed in the financing of the industries, in the provision of skilled advice, and in the organization of schemes for the purchase and sale of products.

4. The most important of the existing large industries in the province are rice-milling, timber extraction, timber conversion, mining (more particularly oil winning) oil-refining, cotton ginning, iron foundries, match factories, ship building, and rubber estates and factories. These industries are all too well known to need description. There is also a large trade in the export of the raw and manufactured products of the country and in the import of manufactured goods of all kinds. The possibilities of the province as regards the establishment of new industries of this large class will be examined in a later paragraph of this note.

5. Some of the best known minor or cottage industries are silk weaving, cotton weaving, lacquer work, pottery and tile manufacture, mat weaving, boat building, carpentry, salt manufacture, umbrella making, blacksmith's work, silver, ivory, metal and wood carving. I attach notes on pottery, lacquer work and silk and cotton weaving by Mr. Morris, the Provincial Art Officer and Principal of the Government School of Engineering, Insein. Mr. Morris has been placed on special duty during recent months to examine and report on some of the more important of these industries. A complete industrial survey of the province is needed before full information can be given as to the nature and extent of all local industries.

6. In the above classification of industries I have not included agriculture, which is in a sense the most important industry in the province. The bulk of the agricultural land consists of small holdings owned by peasant proprietors, and for our present purposes agriculture will be correctly classified as a minor industry. The chief needs of the Burman cultivator are more capital, better advice regarding crops to be grown and methods of cultivation and improved arrangements for obtaining pure seed, manures, etc., and for marketing his produce. I do not place rubber estates in the same classification as agriculture generally, as the larger rubber properties are owned by firms who are in a position to provide skilled management and to construct and equip the factories needed for treatment of the rubber.

7. The scope of the enquiry which is being made by the Industrial Commission is indicated by the set of questions issued to witnesses, and in the following paragraphs I deal with the points raised in these questions with the assistance of the replies received from the witnesses in this province.

1.—Financial Aid to Industrial Enterprises.

8. The replies of the Burma Chamber of Commerce and of other witnesses with commercial experience show that there is no real difficulty in raising capital in Burma or from India for large industrial enterprises which are believed to be on a sound footing. Capital has also been forthcoming from the United Kingdom for investment in well established industries. The returns on such capital are being assessed to income-tax at present both in India and at home, and with the present high rates of income-tax this double assessment will, as the Chamber of Commerce point out, seriously discourage the investment of home capital in future either in Burma or other parts of India. Q. 1, 2

9. The capital needed for financing small local industries is obtained mostly from wealthy money-lenders who reside in the localities in which the industries are being carried on. The workers live from hand to mouth with little beyond their personal credit, and borrow the money for their needs at high rates of interest which leave them with little or no profit on their industry and place them in the hands of their creditors. The provision of cheaper capital is one of the chief needs of these small industries, and co-operative credit societies promise to be the agency by which this need can best be met. A body of workers organized in such a society are in a position to obtain loans from co-operative banks at reasonable rates much below those charged by the village money-lender. Such a society has already been formed to their great advantage by the silk weavers at Amarapura, and the introduction of this system of finance in other localities and in other small industries can be undertaken so soon as a careful study of each industry has been made with a view to ascertain whether the industry can be profitably undertaken under more favourable conditions as regards capital, etc.

10. The position as regards agriculture is much the same as for other small industries, except that the financing of agriculture through co-operative credit agency has been much further developed and is now widely spread in several districts, chiefly in Upper Burma. The further extension of this system awaits a wider growth of a knowledge of its advantages amongst the agricultural population and provision of larger funds by the co-operative banks, through whom the societies are financed.

11. The capital raised in Burma for industrial undertakings has been subscribed mostly in Rangoon by a comparatively small section of the population and the people of the country as a whole have shown no general inclination to invest their money in industries other than agriculture except in so far as small industries have been financed by local money-lenders. The amount of capital lying idle in the hands of small holders must be considerable and it is possible that a growing share of this capital may be made available for industrial investment if, with the spread of the co-operative movement, district banks can be generally established under local management which will be able to bring home the advantages of banking to the people and will inspire them with greater confidence than they possess in the larger banks whose work is centralized in Rangoon and a few other towns. Q. 2A, 10.

12. Burma is a province in which there is still considerable scope for the further development of most forms of industrial enterprise. The Chamber of Commerce mention, however, that this statement does not apply to the rice-milling industry and that there are at present more mills than can be kept fully employed. A reason for this overcrowding of the trade is possibly to be found in the speculative nature of the local rice market and in the consequent uncertainty as to the profits to be obtained in the rice-milling industry from year to year. Q. 3.

13. Financial aid has not been given by Government to any industrial enterprises other than agriculture in Burma. Government loans to cultivators are issued in accordance with the rules which have been framed under the Land Improvement Loans Act, 1883, and the Agriculturists' Loans Act, 1884. These loans are intended to enable cultivators to meet their agricultural expenses and are ordinarily repayable with interest in instalments covering a period of one to five years. Such loans have met with very limited success as a means of financing agriculture. The total sum needed for such a purpose is much larger than Government can be expected to provide, whilst the enquiries to be made and security to be taken in order to protect Government against loss before such loans can be given discourage the cultivator and induce him to look ordinarily to the local money-lender rather than to Government for the assistance which he needs. The total sum advanced as loans during the financial year 1916-17 was R12,70,813, and the total amount outstanding at the end of that year was R14,73,867 ; whilst the advances of private money made to cultivators through the agency of co-operative banks and co-operative societies amounted to no less a sum than R58,39,812 on the 30th June 1917. The figures for Government loans do not include a sum of R7,01,074 which has been advanced for the colonization of new areas through co-operative societies established in such areas. As these colonies become firmly established the Government loans will be repaid and the financing of the societies will be taken over by the co-operative banks. The figures show clearly that as co-operation grows Government loans will play an inappreciable part in financing agriculture as a whole and it will probably be found that such loans can best be diverted entirely to the opening up of new areas to cultivation. Q. 4.

Q. 5, 6.

14. It is difficult to suggest any general lines on which Government aid should be given to existing or new industries, as the nature of each industry needs to be separately considered before any satisfactory decision can be formed. Ordinarily monetary assistance by Government is not required in the case of any existing large industry and in the case of a new industry of this class I think that generally Government funds and other assistance should be directed to the provision or support of an individual pioneer under taking established totest and prove the commercial worth of the industry, rather than to measures framed for the encouragement of the industry as a whole. So soon as a large industry has been proved to be commercially successful no support by Government is likely to be needed for its further development, and more harm than good may result from bolstering up by Government measures an industry which cannot maintain itself without such support. Exemption from income-tax and other forms of taxation may be of some small assistance to a new industry, but such exemption can be of a temporary nature only, and it is hardly likely to have any appreciable effect on the development of the industry.

15. An exception needs to be made to the general statement against the financing of large industries in the case of rubber cultivation or similar undertakings which result in the opening up of large areas of waste land, and in the general development of the resources of the Province. A person or firm investing money in such an industry must wait for some years before he obtains a return on his capital, and whilst the success of the industry may have been established in areas already taken up, financial assistance by Government to new undertakings may materially hasten the growth of the industry. Government advances have been found to be of great assistance to rubber cultivation in the Federated Malay States, and I attach a copy of a letter which I addressed a short time ago to the local Government, in which I have recommended that a rubber survey should be made in this province and that Government loans should be given for the encouragement of such cultivation. Mining operations might be held to fall under this head and to constitute an industry for which Government loans might well be made, were it not that the nature of the industry is speculative to an extent which renders it impossible to say in what instances loans can suitably be made. Money grants-in-aid might also be made by Government to industries of this class and to firms engaged in forestry for the construction of roads or other means of communication which will be of public benefit.

Letter No. 598-5L.-7, dated 20th August 1917, from Secretary to Financial Commissioner to Revenue Secretary to Government.

Q. 11, 12.

16. I look to co-operative societies as the best agency for the financing of small industries. Where such industries have been found on enquiry to be on a sound basis the necessary funds would ordinarily be forthcoming from co-operative banks; but instances may occur in which financial aid by Government is needed for a time until such banks are prepared to find the money. Assistance in such cases would ordinarily be made by loans to the co-operative societies formed by the workers in the industry. I have dealt above with the financing of agriculture through the agency of co-operative credit societies. An interesting note has been furnished by Mr. L. Dawson, Managing Director of the Agricultural Loan Company, Limited, Pyapôn, on the advantages of the establishment of agricultural banks for financing agriculture. The subject is of too large a nature to be dealt with here, but I may note two serious objections to such a system of finance. In the first place such a bank must require individual security for its loans and cannot meet the needs of the poorest class of cultivators who have no security to offer and are most in need of assistance. In the second place an agricultural bank is prepared to make advances so long as the security is satisfactory without regard to the actual agricultural needs of the applicant and does not therefore offer that encouragement to thrift which is given under the co-operative system. In Egypt, where the system of agricultural banks under Government support has been highly developed there has not been that resulting benefit to the cultivator which was anticipated when the movement was started.

Q 7, 8.

17. I consider that pioneer factories should be established by Government both for large and small industries whenever it is found after full enquiry that a new industry promises to be commercially successful and private enterprise is not prepared to make the new departure. All the information which Government possesses regarding the possibilities of the industry should be made public in order that it may be seen whether private effort will be made to start the industry before Government embarks on the venture. It would need to be determined in each particular case whether the pioneer factory should be entirely a Government concern or whether Government should assist an individual or firm who would be willing to come forward, either by financing the undertaking, by granting certain special privileges as regards the raw produce needed in manufacture, or in such other manner as can be arranged without interference with any of the existing industries in the province. The present development of rubber cultivation in Burma has been due to the establishment of the experimental rubber plantation by Government at Mergui, and the Silk Weaving Institute at Amarapura is proving to weavers throughout the province that qualities of woven silks of which they were hitherto unaware can be produced at a profit. A money grant was promised by Government towards the establishment of a sugar refinery in the Minbu District, but the scheme has fallen through for the present owing to the war; and Government has recently undertaken to allow a reduced land revenue assessment on sugarcane cultivation in a block of land in the Toungoo District with the object of encouraging the establishment of a refinery.

18. Pioneer factories for large industries have served their purpose when they have proved to the satisfaction of the public that the industry has been a commercial success, and Government should then dispose of the factory on the best terms which it can secure.

This course was followed with the rubber plantation at Mergui. In the case of small industries it may be found desirable to maintain a pioneer factory as a demonstration factory to encourage the spread of knowledge of the new methods. In such cases the factory should be kept solely for purposes of demonstration or for further investigation, and the articles which it produces should not be allowed to compete in the market with articles of private manufacture.

19. No action appears to be desirable on the part of Government for the promotion of Trade Guilds in Burma. A complete system of co-operative organization should provide small industries with the assistance to the industry which is given by these Guilds in other countries. Q. 12A.

20. Provided that Government assistance is restricted to the pioneering of new industries and to the establishment of demonstration factories for existing small industries there should be no fear that the action of Government will cause any undue interference with private enterprises in the country or with established external trade. Q. 13, 14.

II.—Technical Aid to Industries.

21. Technical or scientific aid to industrial enterprises has been given by Government in Burma in geology, agriculture and forestry and in silk weaving. Experiments were made by Government in the production of tannin extracts but without success. The researches of the Geological Department are reported to have been of material assistance to the firms engaged in oil winning and wolfram mining, and a more complete geological survey of the province will be of great value to the mining industry as a whole. Investigations in agriculture and forestry have been starved hitherto for want of the necessary staff, and in both of these branches there is wide scope for further development. The Silk Weaving Institute has already rendered substantial benefit to the cottage weaving industry. Q. 15, 16.

22. No cases have arisen to my knowledge in which Government experts have been lent or could suitably have been lent to private firms or companies. The large firms engaged in industrial enterprises prefer to engage their own experts, and with small industries expert advice should be given to the workers as a whole and not to any individual. Possibly instances may arise in which a pioneer factory is established with the support of Government and in which the services of a Government expert could suitably be placed for a time at the disposal of the firm taking up the new industry. Officers of the Public Works Department might be permitted to assist private firms with advice as to the alignment and method of construction of roads, bridges, etc. In such cases, it is essential, in my opinion, that all the information obtained by the expert should be at the disposal of Government and should be made public if Government so decide. Q. 17, 18.

23. The present need in Burma is for pioneer rather than demonstration factories. The country possesses large potentialities in raw materials and products which have yet been undeveloped or which are being exported in their raw state for manufacture elsewhere, and pioneer factories are needed with a view to ascertain to what extent production of existing and new materials needed in manufacture can be developed, and whether conversion of raw materials into manufactured articles can profitably be undertaken here. Branches of manufacture which are yet undeveloped and for which a supply of raw materials exists or could probably be produced in the province are leather tanning, sugar refining, starch manufacture, paper pulp and paper manufacture, jute manufacture, soap making, the manufacture of tannin extracts, and pottery work. This list is in no sense exhaustive and cannot be completed until industrial surveys have been made of the whole province. A demonstration factory has already been established by Government for silk weaving as a cottage industry, and similar factories will be needed for other small industries when their commercial possibilities have been proved by means of pioneer factories. Q. 19, 20.

24. The Scientific and Technical Department of the Imperial Institute has been of assistance in the investigations made by the Agricultural Department in Burma into the commercial possibilities of agricultural products. I know of no other branches of industry in which the Imperial Institute has been able to come to our aid, and think it might be able to render more assistance if there were a local institute in touch with industrial development in the province by which references could be addressed to the Imperial Institute. I offer no opinion as to the extent to which research on special subjects should be carried out in the United Kingdom rather than in India, or as to the manner in which the Advisory Council for Research in the United Kingdom can assist Indian industries. Q. 21, 22, 23, 24.

25. There is a pressing need for further industrial surveys in all branches of industry in Burma. Agriculture, forestry and mining would all benefit greatly by such surveys, which would add to our present information as to the raw products which are being or can be obtained in the province, and as to the localities in which the mineral wealth is most likely to be found. Agriculture and forest surveys should be undertaken by the Agricultural and Forest Departments, which both need extra staff to enable this work to be carried out. The geological survey would be undertaken by the Geological Department, which might well be re-organized as a provincial department in this province under a head who would deal with all matters relating to mining. A survey is also needed of the small industries in the province with the object of determining the possibilities of development of each industry. Such a survey should be undertaken by the Department of Industries, when such a department Q. 25, 26, 27.

has been created. The information obtained by the surveys of the various departments should be made public from time to time in such form as is most convenient.

Q. 27A. 26. The need does not appear to have been felt in Burma for Consulting Engineers appointed by Government to aid industrial enterprises by technical advice.

III.—Assistance in Marketing Products.

Q. 28, 29. 27. We have no commercial museum in Burma. Such a museum established in Rangoon would be of great value to the province. The museum should contain specimens of all the raw and manufactured articles produced in Burma which are of commercial importance, and should have a library, from which copies could be obtained of all available literature relating to these products. The curator in charge of the museum should be competent to furnish information to enquirers regarding the different products in the museum, and should be an officer with considerable technical experience. A person not thoroughly familiar with the province has the greatest difficulty at present in ascertaining what raw and manufactured articles the country is capable of producing; what quality of each article is being produced, and in what places and quantities the articles can be procured. The lack of this information may result in much time and money being spent in fruitless enquiries and acts as a serious discouragement to trade development. A proposal to construct a commercial museum for Burma in Rangoon is at present under the consideration of a small committee consisting of officials and non-officials, and it is hoped to place shortly before Government a scheme for such a museum. Difficulty has been found in the selection of a suitable site and in drawing up a design for a museum which will meet provincial needs and will be within the limits of provincial finances. The committee aim at securing a site which will be within easy reach of the commercial centre of Rangoon, and will at the same time be sufficiently large to permit of periodic industrial exhibitions being held in the museum grounds.

Q. 30, 30A. 28. There are no sale agencies or commercial emporia for the sale of the products of minor or cottage industries. Arrangements could be made if thought desirable for the sale of such products in the commercial museum, when it has been established; but I am inclined to the view that it will be found more satisfactory to provide for the sale of these products in Rangoon and other large towns either by private dealers or by co-operative sale societies, and that the functions of the museum should be restricted to an exhibition of the products, with information as to the places at which they can be procured. I attach no great importance to travelling exhibitions of the products of minor industries. These products become sufficiently well known through the agency of shopkeepers and petty dealers, and central exhibitions will assist to the same end.

Q. 31, 32, 33. 29. The first industrial exhibition was held in Burma in December 1916 and attained a great measure of success in spreading a knowledge of the industrial possibilities and needs of the province, and in bringing buyers and sellers into touch with each other. The exhibition was held by Government and was controlled by a small committee. Material assistance in the exhibition of raw and manufactured products, machinery and processes of manufacture, was given by the principal firms, and it is the general opinion that exhibitions of this kind should be held at periodic intervals in future. Such exhibitions should be primarily of an industrial nature and should be popular in character to such extent only as is needed to make them attractive to the industrial sections of the population.

Q. 34, 35, 36. 30. I am strongly in favour of the proposal to appoint trade representatives in Great Britain, the colonies and foreign countries, to represent the trade of Burma and India. These representatives should be men with commercial training and should be fully informed as to the quality and price of the different articles which Burma can produce, and as to the needs of the province in imported articles. The representatives should not themselves engage in trade of any kind, and should furnish full information from time to time to the local Government or to a local trade bureau as to the possibilities of opening up new markets or of developing existing markets for the sale of Burma products and as to the sources from which Burma's needs for outside products can best be met. Temporary Commissions for special enquiries might possibly be necessary on occasions, but the need for these should rarely occur if a system of trade representatives were properly organized. No need has been felt for trade representatives for Burma in other provinces of India. Trade relations between the different provinces are closely established at present.

Q. 37, 38. 31. The publication by Government departments of the lists of articles which they require and the local purchases of articles of suitable quality where these can be obtained at a price not above the cost of similar imported articles seem to be the only measures needed in this connection for the protection of Indian industries.

Q. 39. 32. There is a need for greater banking facilities in the marketing of unhusked rice and other raw products. Difficulty is found at present in making remittances of money from one place to another in the province and banking organization is required which would render more fluid money invested in grain and other produce which has been purchased for storage and not for immediate sale.

IV.—Other Forms of Government Aid to Industries.

Q. 40. 33. Ordinarily Government should demand a fair price in the open market for the raw materials which it owns. Sale at anything below the market price confers an undue benefit

on the purchaser in his competition with other less successful firms and does not assist the trade as a whole. Where Government has a monopoly of the raw product there may be difficulty at times in determining what is a fair market value and it may be necessary to take measures in the disposal of the produce which will ensure that the trade is not brought under the control of one or two firms only. An exception to the general rule that the full market price should be demanded may be desirable where endeavour is being made to start a new industry. In cases of this nature there may be justification for the grant of raw produce for a limited term of years either free or at rates below those obtainable in the open market, with the object of establishing the industry.

34. The land policy of this Government is directed towards the system of peasant proprietorship, and such a system may be said to retard agricultural development in that small land owners have neither the means nor the knowledge to enable them to employ the implements and methods, and to use the manures and other materials needed for scientific agriculture. On the other hand it cannot be said that, with one or two notable exceptions, the owners of large estates, where such exist in this province, have shown any greater endeavour than the small owner to introduce improvements in methods of agriculture. As a class they have contented themselves with securing such rentals as their tenants are willing to pay, and left the tenants to cultivate the land in the manner they thought best. The remedy for existing defects in our agricultural methods appears to lie in the development of the Agricultural Department, by which improved methods will be brought to the knowledge of the cultivator, and in the extension of co-operative organizations, by which groups of cultivators will be enabled to equip themselves in a manner beyond the means of the individual. Q. 41.

35. Under the Land Revenue Rules waste land is granted or leased by Government for purposes of cultivation either revenue free or at favourable rates of revenue for a term of years, and the existing rules for the disposal of land for such purposes are accepted as generally suitable. A rental based on a percentage of the full letting value of the site is leviable under the rules for waste land granted or leased for industrial purposes from the commencement of the term. It is suggested that some initial concession in the matter of rent might be allowed where land is taken up for a new industry, and I see no objection to the adoption of such a principle. The area required would ordinarily be small and the concession would involve no great loss to Government, whilst it might be of appreciable assistance to the new industry. Q. 42.

36. Under the Land Acquisition Act, 1894, land may not be acquired by Government for an individual or firm, and may be acquired for a company in cases only where the work for which the land is being acquired is likely to prove useful to the public and the company has entered into an agreement with Government as to the terms on which the public shall use the work. Instances may arise, such as, for example, the work of construction of a pipeline, where the work may not be for the direct benefit of the public and in which an important industry may be seriously hampered if Government cannot assist in acquiring the land. I think therefore that some power might be given to Government in the Act to acquire land for private purposes where it is proved to the satisfaction of Government that the land to be acquired is essential to the purposes of an industry and that other suitable land is not available. Such a power might be safeguarded by a provision that measures shall not be taken for acquisition until public notices have been issued and all persons concerned have been given an opportunity of being heard against the proposal to acquire the land. Q. 43.

37. Arrangements for the supply by Government of water or water power for industrial purposes are unsatisfactory in that there are no regulations dealing with rights in water, and the public have not been informed of the terms and conditions on which they can obtain such rights. Questions of water supply and water power are becoming of growing importance with the development of mining and other industries, and in a revised Land Revenue Code which is now being framed it is proposed to give the local Government the power to frame rules to regulate the use or supply of the water in rivers, streams and watercourses.

V.—Training of Labour and Supervision.

38. It is almost axiomatic that the spread of primary education assists industrial development. Education leads to a growth in intelligence and increases the value of labour, more particularly of skilled labour. Skilled workmen are being trained at present in the course of their employment in the factories or other industries in which they are engaged, and apprentices are being similarly trained in certain of these industries. The industrial and technical schools in the province consist of the engineering school at Insein, in which the pupils are taught engineering both for Government and private employment, and the Burma Forest School at Pyinmana, which trains the subordinate staff of the Forest Department. There is also the Weaving Institute at Amarapura, in which adult weavers are being taught improved methods. Q. 44.

39. Our system of technical training needs to be better organized. There should, I consider, be Government Technical Schools in which skilled training should be given to fit the pupils for employment in the various industries which exist in the province. There should be two grades of pupils in such schools. The lower grade would consist of boys who had received an elementary education up to the 4th or 5th standard, and who would be given in the vernacular such theoretical and practical instruction as would enable them to become skilled workmen Q. 45, 51.

in the trades in which they would be employed. The higher course would consist of boys with higher educational qualifications and with a knowledge of English, who would be given more scientific instruction which would fit them for employment as skilled supervisors and managers. There is a great dearth in Burma of men of this class to occupy a place between the highly skilled European management and the body of labourers. Such a need has been particularly felt of late in the wolfram mining in Tavoy. Burmans who had received a technical training in mining sufficient to enable them to supervise and control the labour employed on the mines would have found ready employment in Tavoy and would have been of great assistance in the mining industry.

Q. 46, 48. 40. The course of training in both the lower and higher grades should be of a practical nature and should be accompanied by periods of employment in a factory or workshop of the particular trade which is being taught, wherever this can be arranged. This method is being followed at the Government Engineering School at present.

Q. 49. 41. There appears to be an opening for night schools in Rangoon, and one such school might be established by Government as an experimental measure. Here again it might be found necessary to have two classes of instruction, and in the lower class it might be found desirable to combine primary education with elementary technical education, as many of the men attending the classes might have had little or no education hitherto.

Q. 45. 42. Technical schools, similar to the institute at Amarapura, are also needed for the training of adult workmen in the various minor or cottage industries. Such a training would be almost wholly practical and would need to be given by teachers specially skilled in each of the trades.

Q. 50. 43. All technical training should, in my opinion, be under the control of the Department of Industries when it has been formed, and not under the Department of Education. The latter department is not in sufficiently close touch with the industrial development of the province to enable it to determine the courses of instruction to be given in the schools, and its officers have not received the training which would enable them to supervise the practical side of technical work. The Department of Education should arrange in consultation with the Department of Industries that the course of instruction both in elementary and more advanced schools under the Education Department should be drawn up so as to provide that lads who intend afterwards to take a course of technical training either in the lower or higher grade will be instructed in a manner best fitted to suit them for such training. In the advanced schools there might possibly be a technical side in which special attention would be given to higher mathematics, physics, chemistry and similar subjects of value in industrial pursuits.

Q. 52, 53, 54, 55. 44. Government might assist the employees of well-known firms to study conditions and methods in other countries by commending such persons to the Governments of the countries concerned where assistance of this kind is sought by the firm. I do not know of any other form in which assistance towards such enquiries can suitably be given. There are no industries supported by Government which could be required to train technical experts. I can express no opinion regarding the standards of examination for mechanical engineers and the qualifications required in an engineer in charge of a prime mover.

VI.—General Official Administration and Organization.

Q. 56. 45. There is no provincial organization in Burma for the development of industries, and such an organization is urgently needed. Industrial questions are dealt with in several departments, none of which have the time and knowledge to enable them to deal with these questions thoroughly, and as a consequence industrial problems are apt to be neglected and no clearly defined policy is followed.

Q. 57, 60. 46. It is essential to my mind that there should be a Director of Industries for the province. I have advocated such an appointment for some time and I trust that it may be found possible to sanction the appointment at once and that the proposal may not be required to await consideration of the general scheme for industrial development. A careful expert study is needed of our industrial position as regards both large and small industries before Government can determine in what directions assistance should be given, and such an enquiry cannot be brought within the scope of any existing Government department The functions of the Director would be to centralise information regarding the various industries of the province and as regards foreign markets for Burma products; to assist private individuals and firms in obtaining information on industrial questions; to advise the local Government on all matters relating to industrial development; to supervise and control technical instruction of all kinds; and to frame and carry out schemes for encouragement and development of minor local industries. He should be in close touch with the Agricultural, Forest and Co-operative Departments, and with the Mines Department if these were established, and should be concerned generally with the advancement of all measures of industrial importance. I would make no hard-and-fast rule as to the qualifications of the person to be given such an appointment. Business experience, a general technical knowledge, and sound administrative ability would all be valuable assets, and it should rest with the local Government to decide how the appointment could best be filled when a vacancy occurs.

Q 57, 58, 59, 61. 47. The creation of a Board of Industries is not, in my opinion, so urgently necessary as the appointment of a Director. There would, however, be advantages in the formation of

an Advisory Board with the Director of Industries as president, the Registrar, Co-operative Societies, and Research Officers of the Agricultural and Forest Departments as members, and with representatives of the chief industries in the province on the Board. Such a Board should be of material assistance to the Director of Industries in the framing of measures for industrial development. The members of the Board should be encouraged to put forward schemes for the advancement of the industrial welfare of the province for discussion at Board meetings, and the Director of Industries, acting with the support of the Board, might be given considerable financial powers as regards expenditure on industrial enquiries and experiments. The control of the local Government over the Director should be on similar lines to the control exercised in respect of heads of other departments.

48. If a Director of Industries is appointed for each of the major provinces, I do not consider that it is necessary to form an Imperial Department of Industries. The Directors of the different provinces should be in frequent communication with each other, so that each province may be fully aware of what is being done elsewhere, and they might meet periodically for the discussion of industrial questions. There is the danger in the creation of an imperial department that too great an attempt will be made at uniformity throughout the whole of India and that each province will not be permitted to develope on the lines best suited to its local conditions. Q. 62.

49. I have already dealt with the subject of local or cottage industries. A complete survey of such industries and the framing of measures for financing these industries and for improving the methods employed in each industry would be one of the duties of the Director of Industries and his staff; the proposals for finance being framed in consultation with the Registrar, Co-operative Societies. Q. 62A, 62B, 62C.

VI.—Organization of Technical and Scientific Departments of Government.

50. The Agricultural, Forest, Geological and Engineering Departments may all be described as technical or scientific departments which should be capable of giving assistance to industries. The Agricultural and Forest Departments need larger staff for research work, and the Geological Department might well be provincialised so far as Burma is concerned. Q. 63.

51. Until further investigation has been made into the industrial needs and possibilities of this province it is difficult to form any definite opinion as to whether new scientific and technical departments of Government are needed, what experts should be engaged by the Imperial and local Governments, and how such experts should be employed. Questions relating to technological research require expert advice for their solution, and such advice is not forthcoming under existing conditions in Burma. Q. 64 to 77, 80, 81

52. A reference library of technical and scientific works would form a necessary part of a commercial museum, and the Curator of the Museum under the control of the Director of Industries should be responsible that the library is kept up to date. Q. 78, 79.

53. Municipalities and local Boards (there are none such other than Town Committees in Burma at present) will best assist industrial development by the grant of scholarships or other allowances to selected students or workers who are sent for training to industrial or technical schools. Allowances of this nature are being given at present from District Funds to weavers under training at the Silk Weaving Institute. Q. 81A.

VIII.—Government Organization for the Collection and Distribution of Commercial Intelligence.

54. The only criticism which occurs to me on the present system of collecting and distributing statistics and other commercial intelligence by Government and as regards the "Indian Trade Journal" is that the information is frequently belated and would be likely to be of more value if it were got out sooner. The value of these publications could possibly be enhanced if the system of trade representatives in foreign countries were established and telegraphic summaries received from these representatives were included. Q. 82, 83, 84.

55. The "Indian Trade Journal" is little known in Burma except to the larger firms and if a Department of Industries were formed here it would be worth consideration whether a local journal dealing specially with Burma trade should not be published by Government and issued both in English and the vernacular. Q. 85, 86.

56. The publications of the Forest and Geological Departments are reported to be of considerable assistance to the public, and the research branches of the various technical departments of Government should be strengthened so as to enable an increase to be made in these and other publications on industrial subjects. Q. 87, 88.

IX.—Other Forms of Government Action and Organization.

57. No need has been felt to the present for a system of Government certificates of quality in respect of either raw or manufactured products. Mr. A. E. English, C.I.E., I.C.S., Commissioner of the Irrawaddy Division, suggests that improved arrangements might be made for the marketing of unhusked rice and that the rice should be graded by Government Inspectors on the lines of the Canadian system for wheat. This suggestion sms Q. 89, 90, 91, 92,

worthy of further consideration. Legislation is being introduced to guard against adulteration of raw materials for manufacture or of manufactured articles, whenever such action is found to be necessary. An Act has been passed recently to prevent the adulteration of ghee in Burma, and the Chief Conservator of Forests mentions that measures are needed to prohibit the adulteration of cutch. There are no other materials or articles in respect of which action appears to be needed at present, but the need for penalties against adulteration may arise as industrial development progresses.

Q. 39. 58. No suggestions are made for the prevention and misdescription of goods generally. The Chamber of Commerce point out that Customs regulations provide for correct descriptions on imported goods, where such is necessary, and it would seem advisable that the provisions of the Merchandize Marks Act in so far as they relate to the trade description of goods of local manufacture should be enforced by Government, and that it should not be left to private persons to institute proceedings under the Act in respect of such goods. A Board of Industries, acting through the Director, when such have been appointed, would constitute a suitable agency on behalf of Government.

Q. 94, 95, 96. 59. Proposals are made by the Chamber of Commerce for the revision of the law relating to Trade Marks in India. These suggestions need detailed consideration. The existing Patent Law in India is found to meet requirements; the only suggestions made are that there should be provision for filing in the province an application for a patent, and that a file of patent specifications or abstracts should be available locally for inspection. The registration of partnerships is also urged as a measure needed in the interests of trade.

Q. 97. 60. Industrial development is being seriously hampered in Burma by the lack of adequate means of communication. A representative Committee has been appointed by the local Government to enquire into the subject of communications, and a Deputy Commissioner and Executive Engineer have been placed on special duty to frame schemes for each district in consultation with the district officers for the assistance of the Provincial Committee. The Committee's enquiries are not yet completed, but from the reports received from the districts already examined it is established beyond question that the province cannot be given its first equipment of essential roads from annual provincial revenues, and that loans of a considerable amount need to be raised for the purpose. A better system of roads will reduce appreciably the cost of marketing raw products and will encourage industrial development in numerous directions.

Q. 99, 100. 61. Funds are also needed for the extension of the railway system. The more important lines which need to be constructed are probably a railway from Moulmein to Tavoy, the extension of the railway in the Southern Shan States, and the connecting railway between India and Burma. The Moulmein-Tavoy railway would pass through the most important salt field in Burma and would open up country containing wolfram and likely to be suitable for rubber, cocoanut and other cultivation. The extension of the Southern Shan States railway would result in the development of large areas of waste where wheat and other crops could be cultivated, and the Indo-Burma railway would be of general benefit and would assist more particularly in supplying larger bodies of labour in Burma. The waterways of the province are generally satisfactory. Measures of improvement, where necessary, are being considered by the Committee on Communications.

Q. 98, 101. 62. I can offer no detailed criticisms on railway or shipping freights. It seems desirable that Government should exercise some control over freights where a monopoly of carriage exists which might be used to the injury of trade. It might be left to the Board of Industries to bring to the notice of Government any instances in which rates of freight were thought to be excessive or otherwise detrimental to trade.

Q. 102. 63. No adequate enquiries have yet been made as to the possibilities of developing hydro-electric power in Burma. There are large supplies of water power, more particularly in the Shan States, of which no use is being made at present, and it seems desirable that a survey by a qualified expert should be made of such of these supplies as are more readily available, in order that full information may be placed before the public and that encouragement may be given to use such power for industrial purposes.

Q. 103. 64. I consider that the present Mining Rules of the Government of India are of too rigid a nature, and that, subject to the control of the Government of India, the local Government should be given the power to frame rules for the different minerals. It is not possible to frame one set of rules which will be suitable and applicable to the varying conditions under which mining is carried on for precious stones, oil, wolfram, gold, tin and other minerals. Thus, for example, the rules which provide that a prospecting license may be granted for one year and renewed for a further period of two years, whilst suitable for certain forms of mining, are ill-adapted to oil winning. A period of 18 months to two years at least may be needed for the erection of a rig and the sinking of a test bore for oil to a depth of some 1,500 or 2,000 feet, at which the geological formation may indicate that oil is likely to be found, and several years may be needed for putting down sufficient test wells to enable the holder of the license to determine whether he should take a lease of the property. Under the present Rules a prospector who takes out a license for a year only in the first instance has no assurance that he will be permitted to hold the property sufficiently long to enable a real test to be made.

Q. 104. 65. There are no minerals essential for industries of imperial importance which should, in my opinion, be developed at public expense. Wolfram is a mineral of this class, and

experience in the Tavoy District has shown that with Government encouragement and assistance better results can be obtained by private enterprise than would be likely to be secured by Government agency.

66. The chief criticism of the Forest Department is directed against its commercial aspect. The department appears to need strengthening to an extent which will permit of two branches being formed—the scientific, which would deal with research, sylviculture and the general improvement of the forests; and the commercial branch, which would be concerned with the extraction of timber and other forest produce both departmentally and by private agency. Great improvements could be made, if funds were available, in the methods of extraction of timber, more particularly of the non-floating kinds, by the introduction of mechanical appliances, and by the construction of roads and tram-lines. By these means timber and other forest produce would be placed on the market in greater quantities and at reduced cost, and a market could be found for timber which cannot be extracted at present owing to difficulties of transport. Q. 105, 106, 108.

67. There have been complaints from time to time of the competition of jail industries with private enterprise, and provision has been made that jail manufactures may not be sold below current prices in the open market. To avoid the possibility of such competition it would seem advisable that jail labour should be employed as far as possible in the manufacture of articles needed by Government departments, or on stone quarrying stone, breaking or other public work undertaken by Government. Q. 109.

X.—General.

68. There are several industries for which it seems likely that this province will be found on further investigation to be suited on account of its resources in raw materials and the markets which are available for the sale of the manufactured products in Burma and India. Such industries are pottery and tile manufacture, the manufacture of rubber articles, jute manufacture, paper making from wood pulp and other materials, and the manufacture from rice of light beers, industrial alcohol, starch, etc. Pioneer investigations are needed in order to ascertain the commercial possibilities of these and other industries. Paddy husk and plantain fibre are two waste materials for which greater use could possibly be found on further investigation. If a sugar factory is started in the province it should be possible to obtain cheap alcohol from the waste sugar products. Q.110,111,112,112A.

69. Measures are being taken by Government in the Agricultural Department to improve the staple of the cotton grown in Burma, to encourage the cultivation of sugar-cane, to ascertain whether the cultivation of the mulberry tree and silkworm breeding can be improved and developed, to ascertain the possibilities of jute cultivation, and generally to improve the existing products and to determine by enquiry and experiment what new crops can be grown. Q. 112B.

70. Raw materials or partly manufactured articles are not being imported into Burma in any quantity for local industries. The Burma Chemical Company are said to obtain supplies of raw materials from abroad, and raw silk is being imported for silk weaving. Until further enquiry has been made into the possibilities of new industries, the extent to which raw materials need to be imported from abroad for use in such industries cannot be satisfactorily determined. Q. 113.

71. The Industrial Commission in their preliminary note state that Provincial Committees might profitably make detailed and, when necessary, confidential studies of a few typical examples of recent failures in order that the causes which have contributed to such failures may be brought to the notice of the Commission. The only instance which I can recall of the failure of an industrial enterprise during recent years has been that of coffee cultivation. This was being carried on to a small extent in the Toungoo District and failed, I believe, owing to the attack of the plants by a disease similar to that found in Ceylon. There have been instances of the failure of individual firms or companies which have resulted not from causes inherent to the industry, but from mismanagement or, as in the case of certain mining ventures, from the failure of the field to furnish the results which had first been expected. Government intervention could not have been of assistance in any of these cases.

H. THOMPSON,

Chairman, Burma Provincial Committee.

12th November 1917.

THE SILK AND COTTON WEAVING INDUSTRY IN BURMA.

By A. P. Morris.

The number of persons employed on cotton and silk weaving, according to the 1911 census return, was 97,872 and 13,663 for cotton and silk respectively. In the case of cotton this includes the processes of ginning, cleaning, pressing, spinning, sizing and weaving, but does not include the agricultural work of growing the cotton. The silk weaver returns include the numbers employed in the production of the silk, but these are few. There is, according to the census, a marked reduction; the figures for 1901 give 184,260 and 24,195 respectively

in both cases the bulk of the workers are women and, although they are in general shown as whole-time workers, it would be more correct in the majority of cases to describe the work as a subsidiary occupation taken up in time spared from domestic duties.

So far as cotton weaving is concerned the industry in the past does not seem to have risen very much above one of local supply; the workers weaving chiefly for their own use and selling very little. The cotton is procured locally to some extent, but in many areas it is found cheaper or more convenient to buy imported yarns. When this is done the occupation is only justified by the fact that the worker has spare time with not much else to do, it can hardly be considered a profitable source of income. There is, however, an exception to this in the production of a particular kind of cloth known locally as "pyinni." This is a cloth of considerable value as rough material. The best is homespun, though inferior qualities are sometimes made of imported yarns. The "pyinni" industry has grown considerably lately under the fostering care of the co-operative societies and should attain to some importance. The cloth has qualities which do not seem to be obtainable in machine-made material.

Throughout the country special ornamental fabrics are made. These are used locally for blankets, etc., and attract the attention of Europeans and others as fancy materials. If a commercial museum is established specimens should be kept for exhibit, and the museum, combined with a certain amount of organisation, might do much to foster the manufacture, not as a whole-time industry, but more probably as a subsidiary industry for the women.

Again, large quantities of "Shan" bags are made, more particularly in the Shan States. These are used locally, but judging by the sale of them at the Art Shows and taking into consideration the small number of people who see this show, the bags would probably find a good European market. They possess great lasting qualities as well as being attractive, and it would be worth while trying to bring the workers in touch with a European or American market.

The production of cotton has bern receiving considerable attention of late years, and the Agricultural Department have done much to help the cultivators. The bulk of the cotton is grown in Myingyan and the neighbouring districts, and is sold to the large mill-owners for export. The Myingyan mills gin and bale it, they do no weaving. Somewhile ago it was suggested that the co-operative societies should start small ginning mills for themselves, not so much to compete with the larger mills as to secure the separate ginning of enough cotton from selected areas to give seed for the next year crops, a selective ginning which the larger mills did not seem able to undertake. To run these small mills for the co-operative societies would necessitate the supply of a certain amount of skilled superintendence, and it was considered advisable that the men should be members of the local co-operative societies rather than outsiders employed by them. At the instance of the Director of Agriculture a scheme for giving such training was drawn up, was outlined at the Co-operative Conference held in August 1915, and a resolution was formed recommending that this scheme should be funded by Government. The scheme contemplated the establishment of a small training school attached to the Government Engineering School, Insein. It was proposed to take vernacular students and not to make all-round mechanics of them, but to give them a thorough training in running a specific machine. The scheme was not confined to ginning machinery, but was to allow for training in the use of other agricultural machines. The estimated initial cost is Rs. 14,000, and the running expenses are estimated at Rs. 4,000 per year. This provides for some 20 pupils per annum but, if successful, considerable extension would be necessary in course of time. The scheme was approved, but was not put in force for lack of funds.

In the weaving processes some attempts have been made to effect improvements. The Saunders Weaving Institute, mentioned below, has introduced various improvements, and there is another school in Nyaungu. The Saunders Weaving Institute has also introduced the manufacture of "Turkish" towels, and these should find a ready sale. If the indigenous methods can be made worth while as a subsidiary occupation, the improved methods with improved loom, new fabrics, and co-operative action should be able to provide a satisfactory income, even in competition with imported goods.

At present the cotton production is scarcely sufficient to encourage the erection of large weaving mills. Given an increased supply—and the area under cotton gives promise of increase—there is no reason why local mills should not be a success. But this is a question of large capital and concerted action, and the industry ceases to be a village industry or a subject for these notes.

In connection with cotton weaving the subject of carpet-making deserves mention. This industry is not indigenous. It has been introduced by gaol agency and has not gone further than the walls of the gaols. At Insein gaol and elsewhere, carpet weaving is done, but especially at Myaungmya gaol where considerable progress has been achieved during the last few years. One of the staff has spent some time studying methods in India and has taught the prisoners. The Burman prisoners have shown considerable aptitude in design and manufacture, the carpets produced are attractive and of excellent workmanship, and there are great possibilities of extension. With gaol labour economy of effort is not of much importance, the methods employed are somewhat clumsy and might be improved. The earnings of the gaol workers at present sale rates are not sufficient to encourage private work, but the sale prices might be raised quite safely, and improvements in method are possible. The fact

that the gaols are the only places where the work can be learned does much to set a stigma on the industry, but the establishment of a small school under efficient management, would do much to remove this stigma. As a start a special class might be attached to the Saunders Weaving Institute. The industry has a special value in that it makes use of the waste material from ordinary cotton weaving.

Turning to silk weaving the census figures are equally depressing, they show a decrease of 50 per cent. in ten years. The outlook is, however, not so gloomy. Mr. Hurst, Principal of the Weaving Institute, points out that the agricultural expansion of recent years has been a factor in the decline of the silk weaving industry, as the weavers were mostly members of agricultural families. Another very cogent reason is the expanded import of cheap silk fabrics from Europe and Japan. Some five years ago Mr. Saunders interested himself in the industry; he suggested the establishment of a school where instruction in improved methods could be given, and was successful in obtaining the sanction of the local Government to his scheme. A school was established at Amarapura, an expert was appointed as Principal, and the school has rapidly expanded under his supervision. The first improvement was the introduction of a wooden framed loom with a mechanically thrown shuttle. This enables the weaver to double the width of his fabric and increase the length woven per day, in fact the area which a worker could weave per day was about quadrupled. A steel frame loom was also introduced which still further increases the possible output, but it is rather expensive. The workers also learn how to weave more elaborate patterns and are given lessons in design. The result has been a very considerable revival of the industry; it is no longer a precarious source of income; the materials can now be produced at prices which allow competition with imported goods while leaving a satisfactory income for the weavers. Students attend from all over the province, and co-operative societies of weavers have been formed. The school has already done a great deal to extend the industry, and its area of influence is constantly widening. All this in face of difficulties due to the war. The prices of silk yarns which cost Rs. 18 per viss before the war is now Rs. 49 per viss, and dyes are difficult to obtain. The Principal is anxious to extend the scope of instruction and has asked for apparatus to allow of his giving instruction in the production of flowered silk, etc. A year ago the buildings were enlarged, but there is already need for further extension. Attention is also given to cotton weaving, as already mentioned, but silk weaving is the chief subject of instruction. It is all a question of funds, there is a growing demand for instruction, and scope of the instruction might well be extended, but to do so increased expenditure must be sanctioned. The students are already acquainted with the indigenous methods of weaving before they enter the school: to train them thoroughly in new methods takes about six months.

The raw silk is at present chiefly imported from China, only a small amount of inferior quality being produced locally; the pre-war annual import of raw silk was valued at about 26 lakhs. Last year Mr. Lefroy, Government Entomologist, visited Burma and was struck with the high quality of the Burma fabrics; he recommended experiments on silk production, and the subject is now under consideration. There would be objections to silk growing by the Burmese community since it involves the destruction of the chrysalis, but there are plenty of non-Buddhist people living in suitable areas who would take up the industry. The Superintendent of the Northern Shan States is particularly anxious to introduce it among the Kachins and other people in his area as a substitute for the now prohibited opium industry, and in the South the Karens would carry on the work. It will need experiment to obtain satisfactory results, but if money is made available sufficient information as to the best methods should be ready in a year or two.

So far as the dyes are concerned the fine local dyes have given place to chemical dyes which, while they are often rather damaging to the fabrics, are much cheaper in time of peace, are more brilliant, and more regular in tint. The present inflated price of dyes might justify a revival of the indigenous dyes, but it would at best be only a temporary matter hardly worthy of much encouragement. Some interest has recently been taken in a fine blue dye used in Kachin country and usually classed as an indigo; it is not, however, an indigo at all, but a dye produced with rather less effort from an entirely different plant. This, and one or two other of the cheaper dyes might be worthy of attention, but the chemical dyes as a whole will hold the field. Recently the chemists of the Burma Oil Company have interested themselves in dyes, and samples of dyes made locally from petroleum products were exhibited at the last exhibition.

The silk weaving industry was in a bad way, the census returns are an indication of its decline. It may be safely assumed that the next census will indicate a rising curve of employment. This result has been obtained by the provision of expert instruction and the development of co-operation among the instructed.

THE LACQUER INDUSTRY IN BURMA.

By A. P. Morris.

The number of people employed in this industry is not given in the census reports, the lacquer workers and basket makers being grouped together in one total. It is therefore impossible to make any estimate of the growth or decline of the industry by a comparison of census returns. Since, however, the lacquer material, *thitsi*, is not exported and is practically all used in the preparation of lacquered wares, the amount of this material extracted from Government forests is some guide. The amount of *thitsi* extracted has varied during the

last ten years, but there is no sign of a decrease. The industry is by no means moribund, it has had its vicissitudes, but there is plenty of possibility of growth as there is room for improvement in technique.

The chief centre is Pagan with its neighbouring villages of Nyaungoo and Myinpagan. In these three villages some 3,000 people find more or less constant employment on lacquer work, while many more find a part-time employment in the manufacture of the bamboo framework to which the lacquer is applied. Most of the people of Maungdaung and Kyaukka in the Lower Chindwin District are also engaged in the lacquer industry, some 1,500 people being so employed. There are other minor centres in the dry zone. In the Shan States, Laikka, Yawnghwe, and Kēngtūng turn out a good deal of the ware. Mandalay does a small amount, but is chiefly a distributing centre, and the same remark applies to Rangoon.

The materials used in the industry are bamboo and wood for the framework, and in the highest class of ware horsehair; *thitsi* for the lacquer; cinnabar, indigo and yellow ochre for colouring matters; and *shansi* as a finishing varnish.

The principal wares produced are—

(1) Plain lacquer ware for drinking cups, dishes, trays, boxes, etc.
(2) Ornamental coloured wares, commonly known as "Pagan" wares.
(3) Gilt-lacquer wares.
(4) Moulded "thitsi putty" work; with or without glass ornament.
(5) Mosaic work.

The processes are described in some detail in a recently published note on *thitsi* by the Forest Research Officer, Burma (Indian Forest Records, Vol. VI, Part 3).

The highly ornamented work known to the European community as Pagan ware is chiefly produced in Pagan, the other villages being occupied with less ornate ware. Mandalay has a group of workers in Sadaiktap Quarter who make the moulded putty work, chiefly in the ornamentation of *sadaiks*.

The material of most importance in the industry is the *oleo-resin* obtained from the "Melanorrhœa usitata" and known as *thitsi*. This material is a Burma product and does not seem to be obtainable in India. The Forest Research Officer in his monograph says, "the average outturn from the Government forests for the last nine years amounts to about 200 tons per annum, but the actual amount obtainable is probably considerably larger." The price of the material has risen recently, the workers state that they pay as much as Rs. 260 per hundred viss at present as compared with Rs. 170 per hundred viss two years ago. This rise is attributed to increased freights, difficulty of securing transport, and the cessation of supplies from the nearer centres due presumably to the destruction of the trees. The price has also a yearly variation, being, as might be expected, higher in the rains when transport is difficult. With the return of normal conditions freights will doubtless come to their previous level, and by co-operation and purchase in bulk direct from the supply centres the workers could save the middleman's profits, but the destruction of the forests, and the uneconomical methods of tapping now practised, are serious matters which might well be made the subject of special enquiry and legislation by the Forest Department. Even though it effects a rise in price of *thitsi* it would be well worth while, for unless some steps are taken to regulate the process of tapping there is a danger of supplies falling off seriously in the near future.

In the plain lacquer wares practically only one colouring material is used; this is *hinthapada* (cinnabar, vermilion, sulphide of mercury). This material is obtained from China in the crude state, *hinyaing*, and is refined by a small group of workers in Mandalay who regard the process of extracting the free mercury a precious secret, and who sell the *hinthapada* to the lacquer workers at a price which has risen in the last two years from about Rs. 11 per viss to Rs. 30 per viss. The material is the same as the "China vermilion" of the paint trade which was quoted at about Rs. 3 per lb. pre-war price in Rangoon. The use of other red pigments such as red lead does not seem to be very successful. For its application a little *shansi* is added to the pigment and then this is mixed in equal proportions with *thitsi*. The *thitsi* in drying darkens and kills everything except the very strong vermilion of the *hinthapada*.

These two materials, *thitsi* and *hinthapada*, cost at present prices about 60 per cent. of the sale value of the articles. As the craftsmen are unable to force bazar prices up at the same rate as the prices of the raw materials, they have had to meet the increased cost by a reduction of their profits.

The industry has not by any means reached the full scope of its development. Of the "art" wares Sir George Watt in his book on "Indian Arts" writes enthusiastically and he considers that they are capable of great development; more particularly was he impressed with the possible extensions of the *thitsi* putty work. The plain wares, in some ways more artistic, could also be improved and modified to present needs. The evolution of the industry has stopped short during recent years owing to the competition with enamelled iron and other imported wares. In the use of *thitsi* the craftsmen have little to learn from outside sources; successful research work in the introduction of a rapid drier might result in a slight stimulus

to the trade by reducing the time between the processes, but a great deal could be done to increase their profits by bringing them in touch with the export trade and by diverting their attention to modern demands for lacquered wares. At present the import trade in lacquered wares from Japan and China amounts to about half a lakh a year. The material used in the production of the lacquer is similar and in no way superior to *thitsi*, and Burma has the monopoly of supply of *thitsi* within the Indian Empire. The unskilled joinery of the local carpenters and the isolation of the lacquer workers' and joiners' crafts, is the chief cause of the lower grade of the lacquered wares as compared with the wares from Japan. The total amount of *thitsi* available may not increase greatly, but if the use of it can be diverted from crude wares to articles of superior finish it would be all to the good of the workers. It would be a great help to the industry to introduce a few skilled carpenters into the lacquer centres. This could be effected by modifying the curriculum in one of the local vernacular schools, supplying a good and adequately paid instructor in joinery, and encouraging some of the children of lacquer workers to take the modified course, at first, if necessary, granting them scholarships to do so. If some of them, when trained, drifted off to other centres of employment, the money spent would not be lost, while some of them would doubtless settle down to aid in the improvement of the lacquer industry.

Co-operation has only touched the lacquer industry at one place, Maungdaung, and the society has not been working sufficiently long to show results, while the general decline of trade owing to the war has delayed progress. But given the assistance suggested, information as to what is wanted, and help in improving their technique, the Burmese craftsmen should be able to secure an export trade to India to the exclusion of the growing trade in Japanese wares. The craftsmen usually work in small groups, as often as not a family circle, under the direction of a *saya* who finds the funds and employs the workers at fixed rates. These groups are not big enough to allow of their carrying large stocks either of the raw materials or of manufactured articles; they adopt a rather cut-throat policy towards one another and thus put themselves at the mercy of the middleman.

Recently Mr. Raikes (Electrical Inspector to the Government of Burma) has interested himself in *thitsi* and has found it has high insulating properties. The experiments on which he is engaged are not by any means finished, but the discovery opens out possibilities of a large development of the work done with *thitsi* putty. The material may prove suitable for construction of switch bases and other electrical fittings, and should this prove to be the case, there is, in the present group of workers, ample labour available. Such a development may further divert the supply of *thitsi* from its present destination in the preparation of crude wares, but it will greatly increase the profits of the craftsmen.

THE POTTERY INDUSTRY IN BURMA.

By A. P. Morris.

According to the Burma Census returns for 1901 there were 4,438 men and 6,623 women engaged in the pottery industry. The corresponding figures for the Census of 1911 give 3,001 and 6,147 women. The chief reductions were in the Arakan and Irrawaddy Divisions, and it is noticeable that there was a greater decrease among the men than among the women indicating that the decline has taken place in the more skilled branches of the trade. Sagaing District alone shows any noticeable increase in the number of workers, an increase due to the development of the industry at Kyaukmyaung, and here the increase is among the male workers who have risen in numbers from 353 to 815.

The pottery work of the province can be divided into two classes. In one class is a hand-moulded, light fired ware, in the other a ware moulded chiefly on the wheel, more heavily fired and generally glazed.

The first class includes water pots, cooking pots, flower pots and other cheap wares; the process of manufacture throughout the Province is similar and primitive. The workers are generally women who treat this as a subsidiary industry, and the work is seldom carried on throughout the year. Some of the finest work of the class is produced at Shwegu (Bhamo District); it is light and ornamental, but unfortunately the place is rather inaccessible for trade while the breakages in transport are heavy. Pegu and Tavoy also produce a certain amount of the better quality ware of this class. At Letthit near the mouth of the Myitnge (Mandalay District), the workers make a speciality of black pottery, work is more constant, and the better class work is done by men. The people of Letthit have the bulk of the province's trade in pottery *thabeiks* (*hpongyi* bowls). This black pottery ware is distinctly attractive, and there is some possibility of a large development of the trade if the craftsmen can be induced to co-operate in their work and extend the scope of their outturn.

In the second class of pottery the bulk of the workers are men, while the skill exhibited is on the whole of a higher grade. Of the articles produced the "Pegū" jars call for most skill. These range from quite small sizes up to large jars capable of holding 300 viss of oil. The chief centres are Kyaukmyaung, Pyinmana, Twante, Bassein, and Moulmein. It is among the workers in this second class that the greatest chances of development will be found; what there is of good in the other class can be produced by these people.

The pottery clays throughout the Province naturally vary very considerably, but in most centres there is an ample supply of good material for ordinary earthenware. The beds of

clay are generally within a mile or so of the kilns, and the cost of digging, carting and preparing the clay averages out at about Rs. 8 per 100 cubic feet. Samples of the clays have been sent to the Geological Department, Calcutta, for report. That they were suitable for ordinary earthenware needed no proof, the potters have used them for centuries, but it was of interest to know how they stand with regard to the chances of development of the industry. Especially was it of interest to secure a report on the white clays found in the neighbourhood of Yamethin and used by the potters of Pyinmana. The samples sent to Calcutta were not carefully selected or prepared in any way, and very high class results could not be expected. The Director of Geological Survey reports of one sample that it fires to a very pale buff coloured biscuit and is infusible at 1,000°C. This is not good enough for very high grade wares, but it is good enough for cheap chinaware and justifies further investigation of the beds, not only in Yamethin, but also in other parts of the province. As a matter of fact a sample of clay used by the Pyinmana potters and doubtless washed to some extent before use, was made by them into a plaque as an exhibit; the ware produced has a very clean white fracture. At present the only use made of the white clays is as a slip over the surface of the ordinary earthenware to lighten the colour of the glaze.

The glazing material used is generally slag from the lead workings of the Shan States. The price has risen somewhat of late years and the quality has diminished owing to the more complete extraction of lead from the slag. The material is ground, mixed with rice water, and painted over the surface of the green pottery. For a higher class of glaze galena is used, generally over the white clay slip already mentioned. The potters find some difficulty in getting galena owing to the regulations affecting export from the Shan States, but in any case they would not use much as it would be too expensive for the bulk of wares which they make. Recently the Burma Mines have offered to supply litharge to the potters. This would naturally give a much better glaze, but for the wares at present produced it is much too expensive to be used. If the industry develops and a higher grade of ware is produced there may come a time when there will be a demand for litharge. With the development of the tin mines in Tavoy it should be possible to secure for the potters the necessary materials for a white glaze, and provided that kaolin beds of suitable quality are found as seems more than likely, there is room for very considerable development.

From Mongkung in the Southern Shan States comes a very attractive ware with a grey green glaze; it has considerable strength, and might possibly be more accurately classed as stoneware than as earthenware. It is unfortunate that, for the present, Mongkung is so inaccessible, as evidently both the clay and the glaze are of a higher quality than usual.

Except in the case of some of the light fired wares where paddy husk and straw are used, the fuel used by the potters throughout the province is timber. It is the rise in price of this timber fuel which has been the chief factor in the decline of the industry. At Kyaukmyaung, the one place where the industry has grown, the price is still low being about Rs. 3-8 per 100 cubic feet of stacked fuel, but at Twante the price of the same quantity is about Rs. 11, so that, while at the one place the industry is doing well, at the other, although more favourably situated for trade, there is a very noticeable decline. The cost of clay, glaze, and labour in making such articles as glazed pipes would be about the same at Kyaukmyaung and Twante; if there were any difference it would be slightly in favour of cheaper unskilled labour at Twante. The comparison of costs is shown in the following figures which represent the cost of Rs. 100 worth of glazed pipes ex-kiln at Kyaukmyaung and of the same quantity of material at Twante:—

	Kyaukmyaung.	Twante.
	Rs.	Rs.
Digging and preparing clay, pugging, etc.	15	15
Skilled potters' labour	42	42
Unskilled coolie labour fetching and carrying	15	15
Fuel	28	123
Total	100	195

At Letthit the price of fuel is about 20 per cent. greater than at Kyaukmyaung; at Pyinmana it is double the Kyaukmyaung price. But in the Delta and at Moulmein the price is so much greater as seriously to affect the industry. This rise is of course due to the rapid working out of local supplies during recent years.

Even were the potters to combine and purchase large quantities the price would still be high. The Burma Railways are favourably placed in the matter of transport, yet their stated cost of fuel at Bassein is such that, allowing for cost of carriage, the potters would not seem likely to get their fuel much cheaper were they to purchase several thousand cubic feet at a time.

The question arises whether other fuels could not be substituted. Considering calorific values alone and taking Bengal coal at Rs. 14 per ton, the equivalent prices of other fuels are roughly for timber Rs. 7·5 per 130 cubic feet, for oil Rs. 11·7 per hundred gallons and for Burma coal Rs. 10 per ton. These figures indicate that so far as calorific values are concerned timber fuel in the south is now more expensive than coal. This is of course looking at the question only from the point of view of calorific values; there are other points to be considered, among them the necessity for modifying the kilns if other fuels were introduced. As an

alternative fuel the use of paddy husk might be considered, there is a large quantity available, more than the rice mills need for their own use. But these questions can only be decided by experiment under expert advice.

The kilns at present used for the glazed wares are domed structures, oval in plan with an inlet for fuel at one end and an outlet for gases at the other. They are built of unbaked bricks and vary in size, the largest being as much as 30 feet long by 15 feet wide by 3 feet high in the centre. The firing is direct but sometimes the larger jars are used as saggers for the smaller and more delicate wares.

The potters as a rule work more or less from hand to mouth, they make a living wage and the bulk of the profits go to the middlemen. Thus Pegu jars for which the potters at Kyaukmyaung receive Rs. 250 per 100, sell in Henzada for over Rs. 5 each. There are, of course, breakages *en route*, and there are expenses in rafting them down the river, but the middlemen's profits are out of all proportion to the outlay. The craftsmen are lacking in business acumen chiefly because they are uneducated. When co-operation has touched them it has wakened in them a sense of the possibilities of business methods and although in some respects they still exhibit childish tendencies to consider only proximate results they have certainly benefited and will benefit still more by co-operation.

Nothing has been said so far of the production of bricks. Bricks are produced in large numbers in the province especially in the neighbourhood of Rangoon. Speaking generally they lack all the qualities of a good brick, homogeneity, regularity in shape, and accuracy of size. For want of better material they are used, but it does not follow that it would be uneconomical to produce a better article. Brick making is an expert craft and more scientific methods of manufacture might be introduced with advantage.

There is ample room for development of the industry. The value of the imports in pottery, porcelain, bricks, etc., for the year 1913-14 amounted to 22 lakhs of which 13 lakhs worth came from Great Britain and other parts of the eimpire, 3 lakhs worth came from Germany and Austria, and the balance from other countres. The bricks,—value 1½ lakhs—were probably fire bricks and do not enter into the question at present as no suitable supplies of fire clay are known. The chief foreign sources of earthenware and porcelain were Germany, Japan, Belgium and Holland in the order given, while France had a big trade in tiles. Since the war started imports have naturally very much decreased, the most noticeable exception being those from Japan which have increased remarkably as regards earthenware and porcelain. It is not suggested of course that all this trade could be captured by the local potters, or that any very great immediate improvement could be effected. High class sanitary fittings and the higher grades of chinaware are not likely to be successfully made by small societies. But there is no reason why the cheap German chinaware of the coarser kind, the roofing tiles, and the glazed piping at present imported, should not be made at a profit by the local craftsmen.

So far as numbers of craftsmen are concerned the figures given above represent the numbers of expert craftsmen at present engaged in the industry, expert that is to say, in the manipulation of the clay though ignorant of modern methods of treatment. But were the trade to show signs of giving a good wage there would be no difficulty in securing plenty of intelligent labour in the pottery villages and their neighbourhood.

In the way of recent developments not much has been done. The potters can produce the wares they have produced for centuries and for these their skill is sufficient. Recently at several centres, particularly at Kyaukmyaung, the potters have taken to the making of glazed pipes for the Public Works Department. At Twante the glazed latex cups for the rubber industry are being produced in some quantity though the quality might be improved and the quantity is not sufficient for the needs of the province. Elsewhere there are other small extensions.

The Government Tile Factory at Mandalay is now being moved to Kyaukmyaung with a view to its being taken over by the local co-operative society, the only co-operative society of potters.

But for successful development of the industry co-operation and education are necessary. The success of co-operation, given a motive, is fairly well assured in this Province ; expert advisers are needed to provide the education. Probably two manufacturing experts will be required : one to take up the question of preparing architectural materials, bricks, tiles, pipes, etc., and the other to deal with the production of chinaware and improved pottery. It is scarcely likely that one man could cover the whole ground. A survey of the pottery clay deposits of the province is also desirable.

There is a plentiful supply of intelligent labour, and good material seems to be available ; the chief thing lacking is expert advice for the craftsmen. Advice not only on methods of manufacture but also on the state of the market, the demand for new wares, and the best methods of disposing of these products.

No. 598–5 L.-7, dated Rangoon, the 20th August 1917.

From—I. G. LLOYD, Esq., I.C.S., Secretary to the Financial Commissioner, Burma,

To—The Revenue Secretary to the Government of Burma.

The Financial Commissioner desires to submit for the consideration of the local Government certain proposals for the further encouragement of rubber cultivation in Burma.

2. Revised terms on which grants of waste land are made by Government for purposes of rubber cultivation were published in Government's Resolution No. 261—4 L.-3, dated the 14th July 1916, and in the rules under the Lower Burma Land and Revenue Act, and the Upper Burma Land and Revenue Regulation, which formed Appendices II and III to the Resolution. The conditions under which grants would be given in future had been framed in consultation with representatives of the Northern and Southern Divisions of the Lower Burma Planters' Association and the revised rules have been accepted as suitable by the rubber planting community.

3. The improvement of the terms on which land can be obtained has not led, however, to any large growth as yet in the areas of waste land which are being taken up for rubber. The total area granted under the new rules throughout Burma during the year 1st July 1916 to 30th June 1917, amounts to 4,046 acres only, and a considerable portion of this area consists of small grants which average 50 acres or less and which have been issued to Burmans or natives of India. These small holdings are commercially unsound, for rubber cannot be produced at a profit unless the size of an estate is sufficiently large to permit of the establishment of a properly equipped factory. Small grants must therefore have been taken up either in the hope that the rubber produced can be sold to a neighbouring factory or as a speculation with a view to the subsequent sale of the land to an adjoining estate holder.

4. The returns which are being obtained from the existing rubber estates in the Mergui District, at Shwegyin and elsewhere, show that conditions in parts of the province are entirely favourable to rubber cultivation, and the Financial Commissioner believes that there are large areas of waste land covered generally with forest growth at present which are as well suited for the production of rubber as the areas already planted. No detailed examination has yet been made of these waste areas, but Mr. Thompson thinks that in the Tenasserim Division alone the area available and suitable for such cultivation is not likely to be less than 200,000 to 300,000 acres and may be considerably larger than these figures.

5. The early development of these waste areas is of great importance to the future welfare of the province, and the Financial Commissioner has consulted Messrs. Finlay and Meikle, the representatives of the Planters' Association who assisted in the framing of the revised Grant Rules, as to what further measures, if any, can suitably be taken by Government to encourage rubber planting. The chief reasons for which land is not being taken up for rubber cultivation are, firstly, the lack of information regarding the waste areas in the province which are suited for the growth of rubber; secondly, the want of capital for the development of estates; and thirdly, the difficulty in obtaining the necessary staff of Europeans for supervision of the plantations.

6. The Financial Commissioner recommends that action be taken at once to remove the first of these obstacles to further production. There is a lack of means of communication in most of the forest areas where rubber can be grown, and persons interested in rubber can obtain no information regarding likely areas and are naturally discouraged by the difficulties with which they are met in their enquiries regarding such areas. Mr. Thompson proposes therefore that a rubber survey should be made by Government of the areas in the province which are thought to be suitable for such cultivation. Such a survey would most suitably be carried out by a committee consisting of an experienced rubber planter, an officer of the Burma Commission, a Forest Officer, and a Public Works Officer. Messrs. Finlay and Meikle state, however, that it would be difficult or impossible at the present time to obtain the assistance of a rubber planter for this purpose owing to the shortage of staff on the estates, and the Financial Commissioner thinks that it may be possible to carry out the survey satisfactorily without the assistance of a planter if Mr. J. W. Ryan, Extra Deputy Conservator of Forests, can be appointed the Forest Officer on the committee. Mr. Ryan was in charge of the Government rubber plantation at Mergui and should possess the requisite knowledge as to areas suited for rubber. The Chief Conservator of Forests is of opinion that Mr. Ryan is competent to undertake the work. As some of the areas to be visited will be remote from the district headquarters, the Deputy Commissioner might find difficulty in accompanying Mr. Ryan during the course of his enquiries in each district, and I am therefore to suggest that, if possible, a senior Assistant Commissioner should be placed on special duty with Mr. Ryan. The advice of a Public Works Officer would be needed as to the best means of opening up communications in the new areas, but this assistance can probably be obtained from the local Executive or Assistant Engineer.

7. The Financial Commissioner proposes that the committee should examine the waste areas in each district which are thought to be suitable for rubber cultivation and should mark out such areas on the Survey of India 1-inch map of the district. They would at the same time divide up these areas on the map into suitable blocks of 300 to 500 acres each, and would also show on the map the proposed roads to provide means of communication in each area. No demarcation would be undertaken on the ground except possibly at a few important points where posts or pillars might be put down to enable future applicants to locate roughly on the ground the situation of the different blocks. When these maps have been prepared copies would be available for the public at the district office and it would be open to any person to apply for a grant of one or more blocks. If there were no objections on other grounds to the issue of the grant to the applicant, he could be informed at once that the area would be granted to him. It would be necessary, before issue of the deed of grant

that formal notices should be published calling for objections; that the block or blocks should first be demarcated on the ground as nearly as possible in accordance with the 1-inch map; and that a large scale survey should then be made of the area as demarcated. Roads would be constructed as the different blocks were taken up and as provincial or district funds would permit. There is no pressing need for good communications in the early days of a rubber estate.

8. If rubber areas are blocked out in the manner proposed above, the Financial Commissioner proposes to direct that no person shall be permitted to clear land or squat within such blocks, and that no grants of small areas shall be made for rubber cultivation within the demarcated blocks. The reservation of the blocks against small grantees will prevent speculation in small rubber areas.

9. The lack of capital for investment in rubber properties is partly due to the financial stringency arising out of the war, but it is also inherent in part to the nature of the industry. The cultivation of rubber requires the investment of a large amount of capital from which no return will be obtained for some 4 or 5 years at least, and the expenditure incurred during the early years of an estate must ordinarily be met from funds which can be raised locally by the grantee. Outside capital will not be attracted until a considerable amount of planting has been done and the property has an appreciable value. The local capital in Burma available for investment in rubber is inadequate for the rapid development of rubber cultivation, and it is essential that financial assistance should be given by Government to encourage new areas to be taken up. In the Federated Malay States the phenomenal development of rubber cultivation during recent years has been carried out under a scheme of Government loans, and I am to recommend that provision for such loans should be made in Burma. One of the purposes for which loans can be made under the Land Improvement Loans Act, 1883, is —*vide* section 4 (2) (*d*) of the Act,—"the reclamation, clearance, enclosure or permanent improvement of land for agricultural purposes." This definition of "improvement" would cover loans made for the clearance of land for rubber planting, and I am to submit for the approval of the local Government a set of rules which the Financial Commissioner proposes to issue under section 10 of the Act to regulate the issue of loans for rubber cultivation.

10. The draft rules have been framed in consultation with Messrs. Finlay and Meikle. In the Federated Malay States the amount of an individual loan was restricted in the earlier rules to two-thirds of the value of the estate, and in later rules to one-half the value. The Financial Commissioner considers that a more satisfactory provision in Burma will be to require, as set out in the draft rules attached, that the amount of a loan shall not exceed Rs. 100 per acre for each acre cleared and planted within one year prior to the date of the application. Such a limit will be more readily applied than a restriction based on the value of the estate, and it will ensure that loans are not made to an estate which is not being systematically developed. The total cost of clearing and planting an acre of land, and of the upkeep to the time when the trees come under bearing amounts to some Rs. 300 per acre so that a loan limited to Rs. 100 per acre should not exceed one-third or so of the value of the land in respect of which it is made. In order to ensure the rapid development of rubber estates it is proposed in the draft rules that a loan shall not be made unless 20 acres at least have been cleared and planted within the year prior to date of application. This condition will be apart from the terms contained in the deed of grant as to the proportion of the total area which is to be planted with rubber trees from time to time. The proper upkeep of an estate is essential to the safeguarding of Government loans, and it is provided therefore in the rules that a loan shall not be made unless the area already planted is being cultivated and weeded in a proper and efficient manner, and that the outstanding portion of a loan may be recalled at any time if the property is not being maintained in this manner.

11. The Financial Commissioner is not in a position at present to estimate with any accuracy the extent to which loans would be taken out under the proposed rules. He recommends that a budget provision of 5 lakhs be made for such advances in the coming financial year 1918-19, and that the provision in future years be regulated by the amounts which are found to be needed.

12. The third difficulty in the way of development to which reference is made in paragraph 4 of this letter is that of obtaining the necessary staff of Europeans for supervision of rubber estates. This difficulty must continue during the period of the war, but so soon as the war is over there should be numbers of educated young men who will be well fitted for employment on rubber estates and who may find great difficulty in finding other suitable work. It is largely with a view to provide employment for young Englishmen of this class that the Financial Commissioner urges the early acceptance of the present proposals. Unless steps are taken in advance of the close of the war to give a stimulus to rubber cultivation, appointments will not be immediately available at the time when they will most be needed.

13. In conclusion I am to submit a draft advertisement which the Financial Commissioner proposes for publication if the foregoing proposals regarding a rubber survey of the province and the issue of loans for the encouragement of rubber cultivation are sanctioned by the local Government.

Draft Rules under the Land Improvement Loans Act, 1883.

In exercise of the powers conferred by section 10 of the Land Improvement Loans Act, 1883 (as amended by Act IV of 1914), the following rules are made by the Financial Commissioner under that Act for the encouragement of rubber cultivation in Burma.

1. In these Rules 'person' includes firm and company.

2. Any person holding a grant of land for the cultivation of rubber which has been issued under the Land Revenue Rules in force since the 1st July 1916 may apply to the Deputy Commissioner for a loan of money for Government for the purpose of clearing such land and bringing it under rubber cultivation.

3. The application shall be in writing and shall contain the following particulars: –

(1) The name and residence of the applicant.

(2) Information as to the area granted for rubber cultivation in respect of which the loan is required, *viz.*:—

Situation { Township_____ / *Kwin*_____

Date of grant_____

Area of grant_____

Name of grantee _____

(3) Interest of applicant in the area granted.

(4) Full details of all mortgages or other liens or encumbrances on the land.

(5) The area cleared and planted with rubber in each year since the date of the grant.

(6) The area of the grant occupied by buildings and roads or otherwise unavailable or unsuited for rubber cultivation.

(7) The area not yet cleared and planted which is suitable for rubber cultivation.

(8) The amount of the loan required.

(9) The date and amount of loans already granted by Government.

The application shall be signed by the applicant who shall certify that the information contained in it is correct.

4. If the Deputy Commissioner is satisfied after enquiry that the applicant is the present owner of the grant and that the particulars furnished in the application are correct, he may grant a loan within the limits of the funds allotted to him and subject to the following restrictions:—

(*a*) a loan shall not be made unless an area of 20 acres at least has been cleared and planted with rubber within one year prior to the date of the application and unless the whole of the area planted within the grant is being cultivated and weeded in a proper and efficient manner:

(*b*) the loan shall not exceed an amount calculated at the rate of Rs. 100 per acre for each acre cleared and planted within one year prior to the date of the application:

(*c*) the loan, together with the loans, if any, already granted, shall not exceed an amount calculated at the rate of Rs. 200 per acre for each acre of the grant which is not yet cleared and planted and is suitable for rubber cultivation.

5. When the Deputy Commissioner considers it expedient to publish a notice under section 5 (1) of the Act calling for objections to the loan, the notice shall be published at the district and township headquarters and in the villages near the land and copies shall be sent to every person who is known or believed to have an interest as tenant, mortgagee or otherwise in the land.

6. When a grant of land is owned by more than one person a loan shall not be made unless a joint application for the loan is made by all the owners of the grant.

7. Loans shall be made on the security of the borrowers and of the land in respect of which the loans are given. No further security shall be required.

8. Loans shall be issued in three instalments, three-fifths at the time of application and one-fifth in each of the two following years. The Deputy Commissioner may stop the payment of an instalment if he finds that the amount already advanced has not been applied for the clearance of the land and the planting of rubber.

9. Interest at the rate of 6¼ per cent. per annum shall be charged on all loans and shall be payable annually from the date on which each instalment of the loan is issued.

10. Loans shall be repaid in four equal annual instalments, of which the first shall fall due six years from the date on which the first instalment of the loan was granted.

11. The Deputy Commissioner may direct, with the previous sanction of the Commissioner, that the whole of the outstanding portion of a loan with interest to date shall become due at once—

(1) if the interest on the whole or any portion of the loan is not paid within three months of the date on which it falls due;

(2) if an instalment of the loan is not repaid on the date on which it falls due;

(3) if the loan or any portion of it has not been applied to the satisfaction of the Deputy Commissioner in the clearance of and planting of rubber trees on the land in respect of which the loan was granted;

(4) if the area planted with rubber on the land granted is not being cultivated and weeded in a proper and efficient manner to the satisfaction of the Deputy Commissioner.

12. An order sanctioning a loan shall be in the form attached and shall be signed by the applicant in acceptance of the terms and conditions on which the loan is made. A copy of the order shall be given to the applicant.

13. The Deputy Commissioner, the Divisional Forest Officer and any officer authorized in writing for the purpose by either of these officers shall be entitled to enter upon and inspect any land in respect of which a loan has been applied for or granted in order to ascertain that the particulars in the application for the loan have been correctly furnished, that the loan is being applied for the purposes for which it is granted, that the area planted with rubber is being cultivated and weeded in a proper and efficient manner, or for any other purpose under the Act and Rules.

14. The previous sanction of the Financial Commissioner is required to the grant of loans for rubber cultivation on terms other than those set out in these Rules, to the postponement of dates fixed for repayment of instalments, or to the remission or writing off as irrecoverable or any portion of a loan.

15. The Rules under the Land Improvement Loans Act published in Revenue Department Notification No. 145, dated the 12th December 1907, shall not apply to loans made for the encouragement of rubber cultivation.

16. If any question arises under these rules as to whether an area is being cultivated and weeded in a proper and efficient manner, the Deputy Commissioner shall at the request of the applicant for a loan or the person to whom a loan has been granted refer the question for decision to an arbitrator agreed upon by such person and the Deputy Commissioner.

Order granting a Loan for Rubber Cultivation.

The sum of Rs. . . . is hereby granted to . . . . . residing at . . . . . as a loan under the Land Improvement Loans Act, 1883, for rubber cultivation within the following grant:—

Township_____

*Kwin*_____

Date of grant_____

Area granted_____

2. The loan will be paid as follows:—

Three-fifths, *viz.*, Rs. . . . . at once

One-fifth, *viz.*, Rs. . . . . on . . . .

One-fifth, *viz.*, Rs. . . . . on . . . .

and is granted on the conditions stated below.

CONDITIONS.

(1) The loan shall be applied solely to the clearance of land and the planting of rubber within the area of the grant.

(2) Interest at the rate of 6¼ per cent. per annum shall be paid at the end of each year on the amount of the loan outstanding during the year.

(3) The loan shall be repaid in four equal annual instalments as follows:—

Rs. . . . . on . . . . . .

Rs. . . . . on . . . . . .

Rs. . . . . on . . . . . .

Rs. . . . . on . . . . . .

(4) The whole of the outstanding portion of the loan with interest to date shall become due for repayment at once—

(*a*) if interest is not paid within three months of the date on which it falls due;

(*b*) if an instalment of the loan is not paid on the date on which it falls due;

(*c*) if the loan or any portion of it is not applied to the satisfaction of the Deputy Commissioner in the clearance of and planting of rubber trees on the grant;

(*d*) if the area planted with rubber on the grant is not being cultivated and weeded in a proper and efficient manner to the satisfaction of the Deputy Commissioner.

*Date*_____ *Signature of Deputy Commissioner.*

I accept the loan on the terms and conditions above stated.

*Date*_____ *Signature of person to whom the loan is granted.*

DRAFT ADVERTISEMENT.

The following measures are being taken by the local Government for the further encouragement of rubber cultivation in Burma.

A Committee will be appointed in each district in which rubber can be grown to examine the areas suitable for rubber cultivation. The Committee will divide up the available land into blocks of convenient size, tracks will be cut to permit of the areas being visited by applicants, and roads will be constructed later as blocks are taken up and provincial funds permit.

The blocks will be shown on a map on a scale of 1-inch to the mile which will be kept in the office of the Deputy Commissioner, and it will be open to any person to apply to the Deputy Commissioner for the grant of one or more of such blocks. If the block is granted it will be demarcated on the ground as accurately as possible from the 1-inch map and a large scale survey will then be made and a map prepared to be attached to the deed of grant.

Loans will be made by Government under the Land Improvement Loans Act, 1883, to grantees to enable them to clear the land and plant it with rubber. Interest at 6¼ per cent. per annum will be charged on the loans and they will be repayable in four instalments from the sixth to the tenth year after the date of issue. The amount of the loan will be determined by the area already planted, and the method of upkeep of the estate. For further information as to the terms and conditions on which such loans will be given reference should be made to the Rules under the Act published in the Financial Commissioner's Notification No....., dated.....

THE ART INDUSTRIES IN BURMA

By A. P. Morris.

The Art Industries of Burma form a by no means unimportant group, whether they be considered from the point of view of numbers of persons engaged, value of output, or the future development of an export trade. If one excludes from the export trade of Japan those materials which are produced by the organised action of large numbers of employees in big factories, the remainder of her exports, no inconsiderable quantity, is largely composed of "art" wares the product of village industries. And so with Burma, her village industries are largely art industries, for the innate tendency of the people is towards ornament and most of their wares bear evidence of this. In dealing with village industries a note on art industries is therefore not out of place.

The group may be divided into two sections, one dealing with applied art industries, the other with pure art.

In the first section come silverwork, ivory carving, wood carving and sculpture, bronze statuette work, and ornamental iron work either inlaid with silver or plain. A paragraph on each of these must preface any suggestions for the development of the industries as a whole.

Silverwork.—Most big villages have their silversmith and the larger towns have many. The census returns lump together jewellers, goldsmiths, silversmiths, and workers of precious stones, and the latest census gives the total number in this group as 24,829; the silversmiths are not separated in the group but a rough return made by the Provincial Art Officer some two years ago would indicate that the number is not less than 300. Only a few of them attain to any great skill and the bulk of these skilled men are to be found in Mandalay, Pegu, Rangoon, Thayetmyo and Moulmein. The style of work varies, but the number of shapes attempted is not great, the difference being rather in the variety of surface ornament. Attempts to apply their art to modern European needs have generally been unfortunate because the workers, failing to understand the use of the objects they have been called upon to make, have naturally failed to appreciate the true application of their art. There are exceptions, more particularly in the use of niello work, and the exceptions justify the suggestions made later with regard to the aid which might be given in developing the industry.

It is scarcely possible to form any accurate idea of the relative position of the trade as composed with its position ten years ago; the war has naturally hit the art workers more than other craftsmen. There is still, and likely to be, a large demand for silver bowls, etc., on the part of the Burmese population, there is always a demand for this sort of work on the part of the tourist, and it may be possible to secure the interest of some of the higher class firms in Europe and America when the war is over. Given instruction in the wider application of their art, the possibilities of development open out considerably.

Of the other workers in this census group there is not much to be said. The goldsmiths are very numerous, but their skill is small; the demand for them lies in the custom of converting wealth into jewellery, mostly in the form of simple rings or bangles of crude workmanship, which, under stress of fashion or necessity, often change shape. The cutters of precious stones are mostly in Mandalay and Mogôk, their methods are similar to those employed in Paris and Amsterdam, but they are seldom entrusted with any very big work; they earn a fair wage and are generally able to secure as much work as they can manage. Stone setting, except very crude work, which however satisfies the Burma customer, is seldom practised; one man in Mogôk has acquired some idea of the finer European setting, and has done a fair amount of work for European customers.

Ivory carving.—The ivory workers are a very small group. Technically theirs is a specialised development of woodcarving industry, and they generally turn their hands to wood carving when the ivory trade is slack. The skill exhibited is great and the finer carvings will compare favourably with those from any part of the world. The centre of the industry used to be Moulmein, but it has shifted to Rangoon. The best that can be done for the industry would probably be some sort of help in getting into touch with high class European markets.

Woodcarvers and wood sculptors.—Here again the census returns are not much guide. They give a total of about 68,000 persons engaged in wood working in addition to some 1,500 cabinet-makers and joiners. In this number is included sawyers, joiners, carpenters, etc., and among them are the wood carvers. The number engaged on actual carving cannot be determined, but the group is a big one, for here, as in silver work, the local demand is great and the enormous amount of carved woodwork in the *hpongyi kyaungs* (monasteries), structures which seldom last many years,—is proof of the large amount of time spent on this work. There is, however, ample evidence of a decline in the industry independent of the effect of the present war. The fascination of imported corrugated iron, stamped metal work, coloured tiles and other building materials has caused a diversion of the money once spent on carved ornament. The woodcarver has tried to turn to other outlets for his wares and has produced carved furniture attractive to the tourist as a curio, but generally lacking in real value. Here again lack of knowledge has been the bane of the craftsmen. Working on the *hpongyi kyaungs* he was dealing only with applied ornament and his materials had to stand no strains, they were moreover viewed from a distance; changing over to furniture he still regards the article merely as a surface on which to exhibit his skill as a carver, he seldom fully understands its use, he is not a joiner and does not make the structure, and the result is generally an unpleasing curiosity.

It is difficult to predict the future of the Burmese woodcarvers. The total demand for woodcarving is not likely to reach its old limits, but when Burmese ecclesiastical architecture has regained its sanity there will probably be a large demand for woodcarving in a suitably modified form, and if the carver can also learn to be a skilled joiner and cabinet maker there is a demand for his skill in the furniture trade. On the training of the young wood worker as a joiner depends the hope for his artistic ability; very little is being done in that respect at present.

The question of enquiry into the use of other timbers and the supply of seasoned timber is dealt with in the note on furniture making and need not be repeated here.

Bronze statuette makers.—This is a small group, but interesting because it is a very modern development and an indication of what the art worker can do given a suitable suggestion. The bronze statuettes have found a fair demand of late years and the quality has vastly improved; the workers need some instruction in the study of anatomy to assist them in going a step further, but the progress they have made encourages the hope that instruction would fully repay all it might cost. The workers are few and the sales are practically all to Europeans; the local public does not appreciate the work. Here again, after the war, the workers might receive help by bringing them in touch with high class firms at home.

Iron workers.—In plain iron work the Burman craftsmen find a large amount of employment in the manufacture of pagoda '*htis*.' The greatest group of craftsmen is in Mandalay but groups are found in all the big towns. The workmanship is not of a very high class. The tools are primitive and the work is structurally rather weak. Occasionally the craftsmen rise to higher things and the gates of the pagoda at Laikka, made by Mandalay workers, are comparable with some of the fine early English wrought iron work. In this line of work, wrought iron gates and railings, there is room for considerable development did the craftsmen but realise it. They have ample artistic ability. They need help in learning to handle the materials, but the demand is dependent on that return to sanity of Burmese architectural taste, a taste which at present favours imported cast iron railings painted blue and green and yellow. Incidentally it may be mentioned that the gates of the Chief Court were imported

at great expense in freight; a suitable bureau for bringing the workers in touch with the demand would have saved considerable expenditure. The creation, by instruction, of a source of supply would do much to secure a demand.

There is, however, a peculiar industry, chiefly centred in Mindan village, and known locally as *ngwezawa* work. This consists of an inlay of silver on steel. The only use made of it at present is in the production of ornamental blades for *dahs*, and in the ornamentation of betel cutters and a few other domestic tools. It is however capable of a good deal wider application. In this as in other cases the development depends on advice as to possible demands and improvement of technique in the manufacture of the articles to which this special form of ornament is applied. This people of Mindan have also, in common with craftsmen elsewhere in Burma, special alloys which they use for inlay and other work and in the use of which they show considerable artistic ability, but in which their scope is far too limited and is capable of very considerable extension.

Pure Art.—Of pure art there is not much to be said. The Burman has shown considerable adaptability and has taken to drawing and painting on modern lines in a manner which, considering the lack of instruction, is truely wonderful. His natural ability lies in the direction of design and of this his industries of applied art are an indication. The schools as a whole do very little to encourage drawing, the outlook of the teachers, with a few exceptions, is too much of the South Kensington School of Art type, too lacking in breadth of view. Whatever may be the cause the schools do little to assist the natural genius of the scholars. The Annual Art Exhibition has undoubtedly been some help, and recently the attention of students and others has been drawn to the possibilities of book illustration and advertisement design, for which acknowledgments are due to the help afforded by several Rangoon firms. But a school for those of marked ability, a school where teachers for the ordinary schools could be trained, is an urgent necessity, not merely for the encouragement of art as art but for its application to the industries.

This then is the present position of the industries in applied arts. We have a considerable body of natural ability which year by year is being stifled by modern conditions, the demand for art wares is changing, the nature of the output remains unaltered or has failed adequately to meet the changed demand. Government help is practically confined to the holding of art exhibitions and the grant of a few scholarships. The Annual Art Exhibition in Rangoon supplemented by an occasional district exhibition does something to stimulate the industries; it brings the workers together, gives them an opportunity of judging what will sell, and gives the European community a chance of learning what is available and of ordering wares produced in out of the way corners of the province. The craftsmen have a system of apprenticeship of their own; youngsters are taken over by the more skilled '*sayas*' and work under them as helpers gradually learning the trade. Government has made use of this and to encourage the perpetuation of the industries has instituted a series of scholarships for apprentices so trained. There are 16 such scholarship holders in all. The fault of the system lies in the difficulty of ascertaining whether the scholarship holder is really being taught the trade or whether the money is merely being treated as a small donation from Government charity funds. If the *saya* has little work,—and there is no guarantee of ample work,—the youngster will naturally be idle. Moreover the apprentice at best only learns to repeat his master's work, there is little inducement to improve on his methods. To solve this difficulty Government recently sanctioned the entertainment of two craftsmen, a master wood-carver and a master bronze-worker, as unpaid members of the staff at the Government Engineering School. The men find work for themselves and sell their products for their own profit, and the Government apprentices in these crafts are put under them for training. The apprentices are thus under closer observation and their constant attention to work is more certain, they are given moreover some training in the school shops where in the case of the wood-carvers they receive instruction in joinery and in the case of bronze-workers instruction in the handling of metals.

This much is done, but if the art industries are to be saved, if the natural genius of the people is to be developed to its uttermost, a great deal more is required. The success of such a school of art as that at Jeypore is a justification for the foundation of a school of art and more particularly art crafts in Burma. In natural artistic ability, Burma, of the provinces of India, is second to none. The idea that a school of art will spoil the indigenous art, is coupled with the idea that Asiatic art should be tied to its old methods, should in fact degenerate to a mere art of imitation. Such an idea is unscientific and opposed to all laws of nature. It is a choice of life or death, progress or stagnation. If the natural artistic ability is there it will break through. Experiments there must be, and experiments in the future as in the past will be largely failures, but experiments in artistic development as in all other development should be encouraged and stimulated. The best stimulus for the craftsmen lies in giving him the opportunity of learning what is wanted and of studying improved methods.

Nor need the School of Art be an expensive matter. Given a Principal with imagination and of fairly wide sympathies and training to direct and guide the instructors the actual craft masters might well be chosen from the more skilled Burmese '*sayas*,' who, if they were allowed to sell their own products, could be induced to come at quite a small salary. The instruction in most art crafts should however be supplemented by a workshop training under skilled men who would probably have to be obtained from Europe, and for this reason the

school should as a matter of economy, be worked in as part of the Engineering School or of the Technical Institute of which the Province still stands in sore need.

To separate in education the art from the non-art industries is uneconomical; to tackle the technical development of industries without helping on the artistic genius of the people is to waste a valuable national asset.

For some time a proposal to establish a commercial museum has been under consideration. Such a museum should provide space for art products. The advertisement of the art wares thus obtained would greatly increase the prospect of orders for the craftsmen.

Mention has already been made of the possibility of getting the craftsmen in contact with some of the leading dealers in valuable art wares in Europe and America. It is possible that were they sufficiently interested they might in time appoint their own purchasing agents out here, but at present they know little of the art wares of Burma. After the war it would be worth while for Government to give them an opportunity of learning something of the nature of these wares, by purchasing a small collection from the craftsmen and inducing some of these firms to take up the sale on a commission basis. It would be necessary to purchase from the craftsmen in the first instance and Government would recoup itself in the end. Once a connection with a home firm is established Government can drop out.

The present cost of the Annual Art Exhibition is about Rs. 4,000. With the establishment of an art school and a commercial museum the need of an Annual Exhibition would disappear, or it might at least be held less frequently. The money thus saved would help towards the upkeep of the School of Art.

The main need of the art industries is education, an introduction to the demands of the modern market, and instruction in modern methods of handling the materials. The craftsmen are mostly isolated, art is naturally somewhat conservative, experiments will produce many failures, but stimulation of experiment by wisely directed education need not be feared; it is indeed the sole chance of preserving the industries.

APPENDIX.

Note on some industrial, possibilities, etc., in Burma by Mr. J. P. Hardiman, I.C.S., Controller of Munitions, Burma.

1. Manufacture of paint and painting material, largely, if not mostly, lead. (Imports into India £600,000 in 1912-13.)

Requirements include—(*a*) Pig lead. Large and increasing surplus over India and Ceylon requirements available at Namtu. (*b*) Acetic Acid from, *e.g.*, destructive distillation of wood in Northern Shan States forests (or elsewhere).

2. Manufacture of iron and steel. Smelting of iron ore deposits near Mandalay-Lashio line (or elsewhere) with charcoal obtained in the process of wood distillation. Laboratory experiments into the products of distillation needed. If promising, to be followed by investigation of commercial aspect.

3. Distillation of lignite deposits in Northern Shan States (or elsewhere). See 2 above.

4. Manufacture of acetic acid for rubber production and export to the Federated Malay States market. See 1(*b*) above. Increasing local, and very large export, market at hand.

(Object of 1 to 4 would be to create in Burma new range of major industries, and render India self supporting in matter of lead paints. I have asked the Munitions Board to sanction the conduct of laboratory experiments in wood and lignite distillation by Mr. Bellars, Professor, Rangoon College.)

5. Timber industries—(1) Shipbuilding. One wooden ship now under construction in Moulmein, one at Rangoon. Board has called for tenders in Rangoon for the construction of wooden seagoing tugs for war purposes. (2) Manufactures of indigenous timber, at present worked by large timber firms in sawn sections only. Some firms are considering possibilities in connection with Ordnance Department indents—but machinery supply at present difficult and firms, partly for that reason, are not keen to embark on new projects. Possibly the creation of an ordnance factory in Rangoon to deal with manufactures of indigenous wood and timber would be best means of demonstrating possibilities. The board has agreed to place an officer on special duty to look into the possibility of supplying ordnance requirements in past from Burma.

6. Manufacture of arsenic from orpiment. 13,000 maunds, say 500 tons imported into Burma overland from Western China in 1916-17. Local chemical firm reports manufactures practicable, if supply of raw material forthcoming. Laboratory experiments probably needed.

7. Paddy husk. Combustion in Rangoon at present often incomplete, and one quarter of a million tons or more of husk discharged as waste into the rivers and creeks yearly. An electrical engineer in private practice has written to me on this point as follows:—

"(1) * * *

2) * * *

(3) The husk can be converted into gas and the gas burnt in almost any kind of furnace.

Of these No. 3 is probably by far the most suitable as the gas can be generated at the convenient places and led in pipes to where it is required and almost any kind of existing furnace can be adopted to its use.

I suggest that the local Government should erect a small experimental plant and should make a series of tests in order to show that paddy husk can be used in this manner, and to find out the relative fuel value of coal and paddy husk."

Waste in both directions (*viz.* (1) imperfect combustion, and (2) non-utilization of raw husk) calls for examination. Legislation could cure (1) and for (2) engineering survey is wanted. Possibly purchase of husk from mills followed by storage of gas would be found possible, and provide Rangoon industries with cheap source of power.

8. Briquetting paddy husk. Experiments needed.

9. Sulphuric Acid. Material for supply in quantity will be available from Indian sources (Namtu) within a few years. Investigation of possible industries in Burma dependent upon this acid needed.

10. Provincial Department of Industries. Recruiting field would not be so good for a provincial as for an Imperial Department and localization might cut off Burma from existing and future industrial research and educational institutions in India. Scientific investigation needed in many directions in Burma and no staff available.

11. Banking facilities. A Rangoon banker told me that, if the India or exchange banks could be given the management of the Government account in the districts, it might induce them to push out branches. I suggested that he might express this opinion before the Commission, but he was unable to do so, as the bankers have agreed not to give evidence. I gathered from him that they consider the printed questions difficult to answer without excessive reservation, and qualification.

ORAL EVIDENCE, 7TH FEBRUARY 1918.

The following members of the PROVINCIAL INDUSTRIAL COMMITTEE were present:—

(1) THE HON'BLE MR. H. THOMPSON, C.S.I., I.C.S. (CHAIRMAN).
(2) THE HON'BLE MR. C. H. WOLLASTON, SECRETARY TO THE GOVERNMENT OF BURMA, PUBLIC WORKS DEPARTMENT.
(3) MR. H. CLAYTON, I.C.S., REGISTRAR OF CO-OPERATIVE SOCIETIES.
(4) MR. J. P. HARDIMAN, I.C.S., CONTROLLER OF MUNITIONS.
(5) MR. A. RODGER, FOREST RESEARCH OFFICER.
(6) MR. W. H. C. PRIDEAUX, A. M. I. E. E., INSPECTOR OF FACTORIES.
(7) MR. A. P. MORRIS, B. Sc., A. M. I. C. E., PRINCIPAL, INSEIN ENGINEERING COLLEGE.
(8) MR. H. B. HUDDLESTON, AGENT, BURMA RAILWAYS.
(9) MR. J. A. POLSON, IRRAWADDY FLOTILLA COMPANY, LIMITED.
(10) MR. E. J. HOLBERTON, BOMBAY-BURMA TRADING CORPORATION, LIMITED.
(11) MR. J. SCOTT, MESSRS. STEEL BROTHERS & CO., LIMITED.
(12) THE HON'BLE MR. E. O. ANDERSON, MESSRS. BULLOCH BROTHERS & CO., LIMITED.
(13) MR. F. MCCARTHY, "RANGOON GAZETTE."
(14) MR. J. MEIKLE, MESSRS. STORK & CO., LIMITED.
(15) THE HON'BLE MR. A. K. A. S. JAMAL, C.I.E.
(16) MAUNG MAY OUNG, BARRISTER-AT-LAW.
(17) MAUNG HLA PE, THE "SUN" PRESS.
(18) MR. S. W. COCKS, M. A., DIRECTOR OF PUBLIC INSTRUCTION.

(*N.B.*—In reply to the President, the Committee stated that the note* submitted by the Hon'ble Mr. Thompson represented their views also.)

SECTION I.

Mr. Low enquired the reason for the apparent absence of banks up country in Burma, and whether it was not a handicap to the smaller industrialists and merchants. Mr. Clayton said that it was so and continued that there were very few fields for investment and practically everybody up country went in for land or jewels. In reply to a further question by Mr. Low whether there was any place in Burma which has not any bank but which would have had a bank if it were in India, the Hon'ble Mr. Jamal stated that in India every place had not a bank. Shroffs used to finance trade and other things and in Burma instead of the Burman

*Printed as written evidence.

shroff they had Chetties. In India there were a few banks in a few places and not all over the country. In the interior of India there were large mofussil moneylenders, shroffs and Marwaris and the Chetties did in Burma what the Marwaris were doing in India. The business in a place like Prome was not sufficient for opening a branch bank. Mr. Low said that in many other parts of the world banks had opened up business with branches with a very much smaller equipment than they appeared to do in India and they got on very well with a small amount of business. Hon'ble Mr. Jamal stated that the lack of a sufficient number of branches was due to the relative expense of the staff and its maintenance as between the East and Europe and not to want of elasticity of the banking system out here.

Mr. Holberton stated that the Chartered Bank had opened a branch recently in Tavoy and it would be interesting to find out how far and to what extent it would prove successful. It was a fair test case. There were a lot of wealthy Burmans down there, though there were very few Burmese rice, timber or produce merchants. Mr. Low suggested that it would be a fairer test if they could see how Burmese rice and produce merchants generally availed themselves of the banks in a place like Mandalay. One could hardly expect a well-to-do Burman whose property was mostly land to make the same use of banks as a Burman merchant would whose property was mostly in trade.

The Hon'ble Mr. Jamal did not think that if the European banks opened branches they would do any good to the Burmese or Indians in Burma, because they were not likely to be sufficiently in touch with the small Burman or Indian trader. The Burmese people themselves must be induced to start their own banks. Mr. Clayton observed that the trouble at present was that the Burmese were not given any education whatever in economics or account keeping. In reply to a question whether there were any Burman clerks in banks, Mr. Clayton said that they had to learn the business after they entered the banks. The account keeping of well-to-do traders of Rangoon was inferior. What he was doing was to start urban societies in every place which might develop into banks. He was strongly of opinion that some sort of commercial education, accountancy and so on would tend towards getting more Burmese into trade and industries. Maung May Oung thought that the provision of higher education and commercial education was an absolute and vital necessity. He wanted educational facilities on the lines of those of the College of Commerce in Bombay. If it could not be done, a Faculty of Economics in the new University should be introduced. Mr. Clayton observed that in the Rangoon college economics was not taught at all.

From a practical point of view Mr. Low was inclined to doubt whether the teaching of economics was valuable for the purpose of teaching accountancy, commercial law, etc. Mr. Clayton said that the ordinary graduate in Burma was an extremely intelligent and quick young man and had very good practical commonsense and if he was given some insight into trade, commerce, economics, etc., he would be much more ready when he came out of college to turn in the direction of commerce. At the present time he had not that kind of education, and when he came out of college he had no bent towards commerce or industries at all.

Mr. Meikle thought that the difficulties in the way of banking facilities would be overcome by making a greater use of the Local Government Treasuries. In his opinion the Burmese people were not sufficiently educated to use banks.

Sir Francis Stewart asked the Committee whether they would be in favour of industrial banks with or without Government support. Mr. Holberton replied that he did not think that any industrial bank would be prepared to lend money on the sort of risks that Chetties took. The Chetties were very bold and they would risk their money to any extent. They were not very strict about the securities they took. If they could get two or four annas more in the shape of interest they would not care very much for security. In reply to the Hon'ble Sir R. N. Mookerjee, Mr. Jamal stated that the rates of interest charged by the Chetties varied according to the security.

The Hon'ble Mr. Thompson said that they should make a distinction between large and small industries in the matter of finance. He thought that small industries should be financed in the same way as the small agriculturists are, but in the case of the larger industries, there would be a very real need for an industrial bank of some form or other, but how it should be established he was not in a position to say. In reply to Mr. Low who asked whether there were any large Burmese traders and industrialists, the Hon'ble Mr. Thompson said that there were large Burman brokers and dealers but he did not know whether they would be classed as industrialists. He continued that they had not at present any very large industries, but they must be developed.

With reference to Mr. Meikle's suggestion, Sir Francis Stewart asked whether it would not be better to extend the system of advances made by the Presidency banks than to go to the Government treasuries. The Hon'ble Mr. Thompson did not think that the Presidency banks would look at the proposal favourably. The Hon'ble Mr. Jamal said that the Government treasuries were financing at present as much as they could. If they had not got money they must say that they had not got it.

In reply to Mr. Chatterton, the Hon'ble Mr. Thompson said that the cultivators in Burma took *takavi* advances for the purchase of seed, cattle and other things. They took loans very rarely for the improvement of land. The loans they took were all short term loans. Mr. Chatterton asked whether this system of *takavi* loans was capable of development

on a considerable scale. Mr. Clayton replied that these loans were very expensive a Government had to make various enquiries as to the secuirity and so forth. The system worked satisfactorily where they had a Township officer who was very keen on the thing, but where there was no urgent public demand for it, it was not so desirable as it might be.

In reply to Sir Francis Stewart the Hon'ble Mr. Anderson stated that the idea of the Burma Chamber of Commerce was that pioneer factories should be started by Government entirely and utimately taken over by a private firm either by tender or by public auction whichever was desirable. But he thought that they would be disposed of mostly by tender.

SECTION II.

In reply to Mr. Chatterton, it was stated that chemical research was needed in many directions, and there was no chemical or technological knowledge available in Burma and that a technological institute was badly wanted which should be a separate institution from the Engineering School at Insein. Maung May Oung said that six or seven years ago there was a conference held to which delegates from all parts of Burma were invited and it was resolved that Government should be asked to open a central technological college somewhere near Rangoon or Insein and that centres like Mandalay, Prome, Bassein, and Moulmein should have smaller technical institutes which should serve as feeder institutes, but unfortunately these recommendations were not given effect to. It was stated that the technological institute would in the first place deal with mining.

The Committee endorsed the view that it would be a good thing if the Government could supply a much larger amount of expert geological assistance in the first instance to make a more complete geological survey of the country.

In reply to Mr. Chatterton, the Hon'ble Mr. Anderson stated that they should have the Geological Department in Burma as a branch of the Geological Survey as it was now, as otherwise it might contain inferior men and be shut out from participating in the advantages of Indian research.

Mr. Low said a proposal had come before them that the Geological Survey should appoint a certain number of officers to work in Burma who would tour during the field season and during the recess go to Calcutta and write up and collate the results of their work in the field and keep in touch with what was being done in other areas and thus have the advantage of Indian research. The idea would be to keep a man in Burma long enough to let him get a fair acquaintance with the local conditions and at the same time not become entirely one-sided, and at intervals of a few years there would probably be an interchange with men in India.

Mr. Polson stated that they all agreed to what was expressed in the note of the Hon'ble Mr. Thompson on the point.

Mr. Chatterton asked the Committee whether they had in mind any distinction between pioneer and demonstration factories, and if so, what it was. The Hon'ble Mr. Anderson said that a pioneer factory was one dealing with a new industry that had not developed, whereas a demonstration factory was one showing the improved methods of some industrial work that was already going on. A sugar factory to determine whether sugar could be manufactured on a commercial scale or not would be a pioneer factory. Asked whether a factory started by Government not for the purpose of manufacturing crystal sugar to begin with but for the purpose of showing the improved methods of dealing with *gur* would be a pioneer factory or not, he said that it would be a demonstration factory. Mr. Prideaux said that in the case of a pioneer factory Government might start a business which might or might not pay. If it did not pay it would be shut down, but if it paid that factory would become a demonstration factory to which people would go to learn business.

Asked whether there was leather tanning going on in Burma it was said that there was a certain amount of tanning by Madras merchants in Rangoon, Mandalay and Prome. About ten per cent. of the total Indian export of untanned leather was from Burma. There was little export of tanned hides from Burma. As regards paper pulp it was stated that the idea was to manufacture pulp from bamboos. The Hon'ble Mr. Jamal said that he was erecting a factory for manufacturing pulp from bamboos. He had asked the Government of Burma to give him a monopoly, but objections came in from some gentlemen and the Government refused to grant his request but all the same he was going to continue his work. He first of all proposed to manufacture paper pulp and ultimately paper.

As regards the manufacture of tannin extracts, Mr. Rodger said that a tannin research factory had been started but it was a failure. They never had a proper expert and little progress was made. It was an experimental factory run by the Government Forest Department of Burma.

Mr. Low said that both in India and Burma many concessions had been given for the making of bamboo pulp some of which dated several years before the war and yet he had not observed anybody taking up the manufacture of bamboo pulp anywhere in India or Burma and wanted to know what it was due to.

Mr. Holberton stated that speaking for his own firm they had been making enquiries about it during the last five years but they had not yet come to a decision. Mr. Low said that there was a certain amount of information as to the value of bamboo when converted

into pulp on a non-commercial scale furnished by the Forest Department, but there was no information as to the actual working of a factory on a commercial scale, and he wanted to know how far the reluctance on the part of the commercial firms would be overcome by the starting of a pioneer paper pulp factory on a more or less commercial scale. Maung Hla Pe said that it would be a very good thing if the Government did it. Mr. Holberton observed that it would be a great assistance and encouragement to the people if the Government could get over the difficulties with reference to bamboos which they had felt, *viz.*, as regards joints or knots. He thought that there was no machinery here which could deal with anything like a whole bamboo. The expense of bringing out bamboo from the forest was not so heavy as in India.

Asked by Mr. Chatterton whether there was any record available of such experiments as had been made in Burma in bamboos, Mr. Rodger said that bamboos had been cut and sent out and tested in every sort of way, and full records were available. The experiments were not made on a very large scale. The Hon'ble Mr. Jamal said that several experiments on his behalf had been made by the chemists in Calcutta as to the percentage of pulp that could be got, the colour and so on, and he had results of these experiments.

Mr. Low said that there was a proposal that Government should appoint a mining engineer to give assistance to miners. That presumably, he thought, would not apply to the larger firms which might be expected to have at least as good or even a better mining engineer than the Government could afford, but there might be a case for it with reference to smaller miners, and he enquired whether there was plenty of local talent available at reasonable rates.

Mr. Holberton said that the Tavoy Chamber of Mines had asked for additional mining assistance in the way of an expert who should be a trained engineer and geologist. Mr. Wright had told him that he felt very strongly that expert mining assistance was very much required by the smaller people. Mr. Low said that the circumstances were at present very special and peculiar in Tavoy and that the people there were getting out the stuff in a hurry, and he wanted to know whether the same thing would hold good under ordinary conditions. Mr. Holberton said that even then a mining expert was necessary.

Asked whether the remarks in the note about the need for consulting engineers applied in the case of mining engineers also, Mr. Holberton said that consulting engineers might be useful in Tavoy at the present time. In answer to a further question whether, if further prospecting resulted in the discovery of other minerals a man of the type of a consulting engineer would not be required, he said that information had to be got where those minerals were, before the consulting engineer could be employed.

SECTIONS III AND IV.

Sir Francis Stewart asked whether the scheme for the construction of a commercial museum in Burma was not yet ready. Mr. Hardiman said that it was not, except that the site had been selected. The Hon'ble Mr. Thompson said that the Committee had submitted a report to Government. That Committee was really the Exhibition Committee which was originally appointed for the last Exhibition which was held a year ago.

Asked how the paddy crop was financed in the earlier stages, the Hon'ble Mr. Anderson said that it was done by Chetties during cultivation and when the crop was ready they got money from the big firms and banks to bring it in.

Mr. Low said that, it had occurred to the Commission that many products made by domestic industries in Burma would be likely to find a market after the war in places outside Burma. It might not be a big business but it might be worth looking into.

Maung May Oung was of opinion that it would be useful if they could start in Rangoon something on the lines of the Home Industries Association in Calcutta with an emporium in Rangoon, and in touch with outside selling agencies and the Indian Trade Commissioner in London. There were at present a few firms making it a speciality to deal in Burmese work of the sort of lacquer ware, silk and other things. The Japanese were very clever and they successfully imitated these things. His correspondents wrote to him asking for certain Burmese things which were very cheap, serviceable and strong. He did not know where they could be got. There was no shop in Rangoon which could give the information, and so he had to write to some of his friends and get the information.

Mr. Low asked whether any members of the committee were aware that the land policy of the Government had interfered with industries either among Burmans or non-Burmans. Maung May Oung said that the Government had always been willing to help as far as possible. He did not think that their policy had caused any interference.

The Hon'ble Mr. Anderson said that the Chamber of Commerce was of opinion that the rules for granting land for mining and planting had been recently satisfactorily amended and as far as they knew, there was no difficulty in acquiring land for industrial purposes.

Mr. Low asked the views of the committee on the subject of the employment of the Land Acquisition Act to acquire land for industrial concerns, and whether there was any serious difficulty experienced in acquiring land for industrial concerns which could be got over by a proper use of the Land Acquisition Act. The Hon'ble Mr. Anderson did not think that there was any difficulty. Mr. Hardiman said that the Land Acquisition Act did not give power to acquire land for general industrial extension only.

Mr. Low said that land could be acquired in the public interest. The difficulty always appeared to be what should be the criterion as to when an industrial company was in the public interest sufficiently for Government to acquire land.

Mr. Jamal said that Government should assist any man who came along and wanted to start a factory, in getting the land required. Maung May Oung said that the Government must in addition be satisfied that the man had got capital and ambition. The Hon'ble Mr. Anderson said that the Chamber of Commerce was not in favour of land being acquired under all circumstances but thought that it might be justifiable only under certain very exceptional circumstances, but the question had not risen as yet in Rangoon. Large sites for factories were still available. It was not an urgent question in Burma as it was now in Bombay or Calcutta.

In reply to Mr. Chatterton Mr. Huddleston said that he was not aware of any difficulty being experienced in regard to the construction of feeder railways or branch lines serving particular industrial concerns and connecting them with the main line. He had no knowledge of any case where an enterprise of that kind had been thwarted through the difficulty of acquiring land. If any valuable mineral be discovered and it was desired to connect it with the railway the land required for the purpose would have to be acquired under the Railways Act. No difficulty was experienced in regard to providing sidings from the existing railways.

Section V.

Mr. Chatterton asked whether there was any special provision made in the Railway Workshops or in any of the other larger workshops for the taking in of apprentices with a view to training them either as mechanics, that is, as workmen, or as men who would afterwards become supervisors and foremen and possibly rise to higher posts.

Mr. Polson said that apprentices were employed in the Flotilla Company's Dockyards with a view to their becoming engineers, but they were too backward. They did not often succeed because they were deficient in education. They made good fitters but very few of them passed the engineer examination. If a technological institute existed in Rangoon to enable these youths to improve their technical education a larger percentage of them would probably be able to pass the engineer examination.

In reply to a further question by Mr. Chatterton Mr. Polson said that they were now taking apprentices from Insein after training there. Mr. Morris had arranged to send some of the boys to work six months in the Irrawaddy Flotilla Company shops and then go back and work in the school, but the Eurasian boys who lived in Rangoon did not find it convenient to go to Insien and it would be a very great advantage to those boys who lived in Rangoon to have a technological school in Rangoon.

Mr. Chatterton asked whether that difficulty would be got over by providing hostels in Insein for students. Mr. Polson replied that it might be, but he thought that it would be preferable to have a school at Rangoon instead of having it away in the wilderness, far from the centre of the industry.

(*Mr. Polson here gave confidential evidence.*)

Mr. Chatterton asked whether there were Burman apprentices in Railway workshops. Mr. Huddleston replied that about two years ago they took about fifteen apprentices, but they had all gone back and had not been replaced.

Mr. Low asked whether they were Burmans or Europeans. Mr. Huddleston replied they were Anglo-Indians; and in reply to Sir R. N. Mookerjee he said that there were no Burmans as apprentices.

Mr. Chatterton asked whether there was any demand on the part of Burmans for admission as apprentices in engineering workshops generally. Mr. Polson said that they did not find Burmans coming forward freely. Mr. Chatterton put the same question to Mr. Morris. Mr. Morris said that first of all he would make a distinction between apprentice craftsman and apprentices who would become mechanical engineers; in the case of the latter admission to the Engineering School was by examination, as without certain educational qualifications they could not follow the classes. Mr. Polson of course preferred to have Anglo-Indians, but Mr. Morris' own experience was that Anglo-Indians would not stay; his wastage in the case of Burmans was about 33 per cent. in the first year of their training, and in the case of Anglo-Indians 90 per cent.

Mr. Polson said that his company had 28 Eurasian engineers just now, and they were rendering useful service on board steamers.

Mr. Chatterton asked whether these Eurasians were men trained in Rangoon. Mr. Polson replied that most of them were trained in their dockyards as apprentices and that they were doing satisfactory service. Mr. Morris said that of course that was true but the question was how many were taken and how many were staying now, and what was the annual wastage. So far as Burmans were concerned Mr. Morris said that there was no encouragement to them to take up mechanical engineering and there was no facility for them to take up. They started a mechanical engineer class at Insein 5 years ago; of course Burmans did not see that it would be a good thing, and so they started on a very small scale. A year ago

two students passed out with the engineer certificate after a 5 years' complete course: the engineer certificate necessitates 5 years' apprentice training. Those two students are doing very well now and they have started on Rs. 125: with the consequence that to some extent they are getting applications from Burman students. Mr. Polson has two or three Burman students from the Insein school in his engineering shops.

Mr. Chatterton asked how many students were working at the school at the present time. Mr. Morris replied there were 15 actually in the school now. Mr. Chatterton asked whether those 15 were all in the workshops. Mr. Morris replied that they had not finished their time in the school; they stay six months in the school every year for three consecutive years, and the final two years they spend in the shops.

Mr. Chatterton asked whether the school was shut up for six months, to which Mr. Morris replied that they had other classes, but so far as mechanical work was concerned that class was closed.

Mr. Chatterton asked whether it would be possible under the apprenticeship system to have two batches of students; he did not suggest that, but only wanted Mr. Morris' opinion on the subject. Mr. Morris replied that that was what he proposed, but they had not enough students at present to make up a double set of classes.

Mr. Chatterton asked Mr. Morris whether the students that he had at Insein at the present time were all Burmans, to which Mr. Morris replied that practically they were all Burmans: there were one or two Eurasians, but they ought to transfer the school from Insein to Rangoon: it was a great mistake to have it in Insein. There was a demand for part time classes, but it was impossible to work such classes in Insein.

Mr. Chatterton asked whether he meant evening classes, to which Mr. Morris replied that he meant a certain number of morning classes.

Mr. Chatterton asked whether any experiments had been made in Rangoon with night schools, and whether people would attend such schools. Mr. Morris replied in the affirmative and said that he could not give statistics but that there had been demands for such schools.

Mr. Chatterton asked Mr. Polson whether he thought that the people that were working in his dockyard would attend night schools after their work in the day. Mr. Polson replied that it might be difficult to induce their boys to attend night classes after a long day's work in the workshops.

Mr. Chatterton suggested as an alternative whether it would not be better to set apart a certain amount of time in the day time to give them a course of instruction. Mr. Polson said that that would be preferable and his company would be glad to acquiesce in such an arrangement.

Mr. Chatterton asked whether the engineering shops near Rangoon were sufficiently close to one another to make it feasible to start a polytechnic institute for the benefit of them all. Mr. Polson replied that he thought that a central place in Rangoon could be reached by all the boys, and that there would be no difficulty about it.

In connection with this point Mr. Morris said that from an educational point of view it would be better in time to have a system by which students could study half the day and be in the shops half the day rather than the present system of six months alternately in shops and school. The six months' system was better than a system in which theory and practice were entirely isolated, but the half day system would be better still. A six months' gap in school work results in a good deal being forgotten, and it has to be re-learned each period of training.

Mr. Chatterton asked whether in the Insein school any instruction was given in drawing or art or art industries? Mr. Morris replied that they had no art instruction at all except that a few Government scholarships are granted to art apprentices, who are put under local native craftsmen. But recently the craftsmen had been induced to live at the Insein school and the Government apprentices in their particular crafts are put under them and thus kept under more supervision.

Mr. Chatterton asked whether there was anything in Burma analogous to the schools of Art or Arts in India. Mr. Morris replied in the negative.

Mr. Chatterton asked whether it is not the case that Burmans have developed considerable natural aptitude for art work. Mr. Morris replying in the affirmative, Mr. Chatterton further asked whether there was any scheme under consideration for developing their artistic faculties. Mr. Morris said that various suggestions had been put forward and they evoked a certain amount of sympathy from Burmans, but nothing came of them.

Sir Francis Stewart drew attention to paragraph 43 and asked Mr. Cocks whether he agreed with that. Mr. Cocks replied in the affirmative. Referring to the aptitude of the Burmese for drawing, he said that they had been able to fit in drawing teaching in schools; they had abandoned the old South Kensington system, and adopted a more practical scheme following closely the lines of Augsburg's method; they had not been able to do anything in the way of training in applied art; he thought that it was a question on which the opinions of the commercial members of the Committee would be valuable. Government wished to know what could be done to apply the Burman's talent for drawing to practical uses. Further asked what was his opinion as regards that training, Mr. Cocks said that he could

not say anything definite because he did not know what was the commercial value of such training and how it should be utilised.

In reply to a further question, Mr. Cocks said that in normal schools only a very limited amount of drawing was taught; on the other hand, a student who showed aptitude for drawing could take up a more advanced course, that was the system all over India.

Mr. Low asked whether small industrial concerns carried on upcountry by Burmans, such as small rice mills, oil mills and so on, were running in a decent state of technical efficiency or not. Mr. Polson said that he did not believe they were; in the delta there were about 100 small rice mills, but they very frequently went out of order. He thought it was correct to say on the whole that these small enterprises were very badly run from the technical point of view, but they had a factory inspector present and he could better answer such questions.

Mr. Prideaux said that they did not repair until breakdowns occurred. Mr. Low enquired whether there was any class of man whom they could rely on, and call in to help to put things right. Mr. Polson said that they were by no means well off in that respect, and he thought that an increase of the number of technical students would go a long way to meet the situation.

Mr. Low further enquired who there was at present, for instance, to put up an oil engine for a small industrialist, set up his machinery, and when there was a breakdown come and put it right. Mr. Morris answering in the negative, Mr. Low asked whether it would not be well if they had a Department of Industries which would also advise small industrialists on such matters. Mr. Clayton said that it would be a great help. The Hon'ble Mr. Anderson said that small men already go to engineering shops of which there are several. Mr. Polson remarked that their difficulties were more particularly running difficulties.

Replying to Mr. Low's question as to what class of men these small industrialists had in charge of their machinery and whether they were of the fitter type, Mr. Prideaux said that they were engine drivers, the same class of men as fitters.

Mr. Low further asked whether they were men who had had training in the railway shops as fitters. Mr. Prideaux replied that such men would go out as engineers. Mr. Low further asked whether there was any such regular flow of men from the railway shops into private employment as they had in India. Mr. Huddleston said that he did not know the circumstances in India, but that he did not think that here in Burma men would go from the Burma Railways to the small industrial shops. Mr. Polson added there was a considerable flow of young Eurasian engineers from their dockyards to rice mills.

Referring to paragraph 47 Sir Francis Stewart asked whether business men would be willing to serve on the Board of Industries there suggested. Mr. Anderson replying in the affirmative, Sir Francis Stewart asked whether there was need to include the Registrar of Co-operative Societies and officers from the Agricultural and Forest Departments in the suggested board, and whether their services could not be dispensed with, and added that to be really useful such a board must be small. The Hon'ble Mr. Anderson remarked that there were too many officials on the suggested board, and said he would modify the proposal by saying that there should be only one official member at present.

Mr. Clayton said such a modification would eliminate the representation of small industries. The Registrar of Co-operative Societies represented small industries just as the officers of the Agricultural Department more or less represented the agriculturists. If these official members were removed, the Director of Industries being mainly the representative of the chief industries of the province, the small industries would have no representation whatever. Sir Francis Stewart thereupon asked if Mr. Clayton would so constitute the board as to indicate that small industries were represented, to which Mr. Clayton replied that so long as a distinction was made between small and chief industries, it did not matter whether the small industries were represented by an official member or an unofficial member. But if there were a board of industries, small industries should certainly be represented on it.

Replying to a further question by Sir Francis Stewart, Mr. Clayton said that the Registrar of Co-operative Societies should represent the small industries now: most likely in time there might be unofficial representatives.

Mr. Chatterton enquired whether the Director of Industries could not represent small industries: Mr. Clayton replied "he might certainly."

Section IX.

Mr. Low said that the Commission were informed that the railway which goes to Lashio, called the Northern Shan States Railway, charge freight on goods double that on the main lines of railway and enquired whether that information was correct On Mr. Huddleston saying that it was correct, Mr. Low asked what was the object of that measure. Mr. Huddleston replied that the railway there was expensive to construct, maintain and work. Mr. Low asked whether such rates were charged irrespective of the ability of the goods to stand the charge, to which Mr. Huddleston replied that he was speaking generally but that they had reduced rates for several items of traffic on the Northern Shan States Railway.

Replying to a further question by Mr. Low, Mr. Huddleston said that such reduced rates obtained on the Lashio branch line which Mr. Low referred to and also the Southern Shan States Railway.

Mr. Low asked whether any timber was coming out through the Lashio branch. Mr. Huddleston replying that not very much was coming, Mr. Low remarked that they saw timber going towards the mines rather than coming outwards.

Mr. Low remarked that the Commission heard a good deal of evidence about the necessity of communications in the forests, but they saw a line there ready at the door of the forest and not much timber was going out. Mr. Rodger replied that most of the timber extracted from forests east of Maymyo was floated out.

Mr. Low enquired whether the question had ever been considered whether the increase in the rate had not had the effect of so greatly reducing traffic as to make it a losing position. Mr. Huddleston replied that they have reduced rates for timber.

Mr. Low enquired whether they had reduced the rates to the same level as on the main line, to which Mr. Huddleston replied that they had separate rates. Mr. Low further asked what was the reason for the difference between the reduced rate and the double rate that they charged on the Lashio branch. Mr. Huddleston replied that there were reduced rates although they were higher than on the main line.

Mr. Low asked whether there were particular instances of commodities for which reduced rates were given. Mr. Huddleston replied that reduced rates were given for traffic from the Burma mines, for potatoes and other traffic.

Referring to the Committee on Communications mentioned in paragraph 61, Sir Francis Stewart enquired how that was constituted. The Hon'ble Mr. Thompson replied that there was a general advisory committee, and a working sub-committee. A sub-committee has been appointed to examine all the roads in the province, to take them district by district, determine exactly what additional roads are needed and what improvements are needed to existing roads in order to provide a fair road equipment for each district.

Sir Francis Stewart wanted to know whether there was a special committee in each district. Mr. Thompson said that there is one sub-committee for the whole province, but that it makes its enquiry district by district: there are two officers on special duty. The sub-committee is mainly composed of non-officials and is under the general Communications Committee which was appointed by Sir Harcourt Butler. This general committee is a standing committee and the sub-committee presents its reports to it. The sub-committee meets frequently and as a matter of fact its reports go to Government direct. The standing committee sits occasionally only.

Sir Francis Stewart enquired whether this committee deals with waterways and railway communications also, to which the Hon'ble Mr. Thompson replied in the affirmative. Questioned whether it has made any specific recommendations to the Government, the Hon'ble Mr. Thompson said that it has as regards the districts with which it has dealt already. Reports have been sent for 4 out of 8 divisions of the province.

Sir Francis Stewart enquired whether any action has been taken on those recommendations. Mr. Thompson replied in the nagative; the recommendations have been generally accepted by Government, but have not been given effect to.

Mr. Polson intervened to say that there was no money available to give effect to the recommendations. The Hon'ble Mr. Thompson agreed that that was one reason. Mr. Polson continued and said that the committee prepared estimates and presented them to the Government and said that enormous sums of money were required to bring the communications into reasonably good order, but there was no money.

Sir Francis Stewart enquired whether the non-official representatives on the committee were nominated or elected by the Chamber of Commerce. The Hon'ble Mr. Anderson said that some were nominated. The Hon'ble Mr. Thompson added that the sub-committee was appointed by the general committee.

Sir Francis Stewart enquired whether the statement in paragraph 61 that the waterways of the province are generally satisfactory represented the true state of affairs. The Hon'ble Mr. Thompson said on the whole it was so. Mr. Polson intervened and said that he did not entirely agree with that remark. A good deal more can be done to the waterways. Waterways in this country have been neglected entirely by the Government of Burma.

Sir Francis Stewart wanted to know whether what has been done to waterways so far has been done by Government or by the Irrawaddy Flotilla Company. Mr. Polson replied that the Irrawaddy Flotilla Company at its own expense maintains a vessel specially for the purpose of pounding rocks and another vessel for the purpose of picking snags out of the river, also a large fleet of launches for buoying the river. The money which it spends on the Irrawaddy river is approximately Rs. 2½ lakhs per annum.

Sir Francis Stewart enquired whether Mr. Polson considered that expenditure of that nature should be incurred by Government, to which Mr. Polson replied that a time might come when it might be necessary for the Government to provide relief of that kind.

Mr. Chatterton asked with reference to the mining rules of the Government of India and their application to oil fields, whether the existing arrangements are found to be satisfactory

or whether any revision of the rules is required. The Hon'ble Mr. Thompson regretted the absence of Mr. Ritchie who would best be able to answer such a question.

Thereupon the Hon'ble Mr. Jamal said that he made a representation to the Government of Burma. Asked whether there was any competition between the different companies on the fields, the Hon'ble Mr. Jamal said there was.

Mr. Chatterton asked with reference to jail industries, whether there were any complaints on the part of private enterprise regarding competition from jail industries. Mr. Anderson said that there were no complaints to make.

Mr. Chatterton wanted to know what industries were carried on in jails in Burma. Mr. Polson mentioned chair making and furniture making, and Mr. Morris mentioned cane work as one of the jail industries, which had been credited with under-selling local manufactures. The Co-operative Society of Cane Workers, Mandalay, made a statement to this effect at the last co-operative conference.

Witness No. 461.

Mr. G. Vogiazis, *Manager of the London-Rangoon Trading Co., Ltd., Tannery and Hides Export, Rangoon.*

Written Evidence.

Esentials of Industrial development.

The industrial development of a country depends solely upon the degree of the industrial training and development of the native people and not on the financial power or capital, for the simple reason that in order to obtain the first a certain period of time more or less long is required, whereas the obtaining of the latter is often a question of favourable circumstances which can often be met at the shortest imaginable time, provided the industry in question promises a certain and secure dividend to those concerned.

Therefore before we proceed to discuss the industrial possibilities of a place whatever, it is absolutely necessary to inquire whether and to what extent the internal working power or the indigenous industrial training exists in it. For it is a well known fact that an external industrial assistance or outside labour and supervision and expert management means heavy expenditure and such an assistance would be of no avail when not supported by the internal working power or indigenous industrial activity as it will prove quite unable to introduce profitably its products into other markets and to fight the battle of competition with other places where this powerful internal factor is flourishing. In other words wherever the industrial ground of a place presents the features of a somewhat sufficient industrial understanding the accomplishment of good and satisfactory industrial results is a matter of right and convenient occasion only.

Good indigenous workmanship only would lead the way to the prospected industrial attainment and to advantageous and profitable utilization of the more or less abundant raw materials of the place. The indigenous workmen, these various hands of the managing or training external industrial head, hands not merely executing what the external industrial knowledge instructs, but thinking—so to say—hands, intelligent and skilful hands that would try and succeed to surpass the various obstacles which they would meet while discharging their industrial duties.

It is a fact that Burma for which we are now specially concerned cannot boast of possessing this essential and most important internal factor, the workman; and in a place like Burma where the mosaïc of the inhabiting element differs in race, religion, language, habits and inclinations to a considerable extent we must consider the following:—

(1) Which would be the race in general to give the most efficient and skilful labourer, supervisor and manager?

(2) When, where, how and by whom he will be trained?

1. Which would be the race in general to give the most efficient and skilful labourer, supervisor and manager?

Qualities of Burmese labour.

The question being about Burma's industrial possibilities, in my opinion the successful workman, supervisor and manager must be expected amongst the different classes of Burmans first, and secondly only amongst the other native people. I am in favour of Burman in this matter for the only reason that although quite untrained in good many lines he shows in the few lines he is occupying himself by natural and national inclination that he possesses those necessary persevering working faculties which would by the time make of him the careful labourer and the intelligent and efficient supervisor. Naturally not fond of alcoholic drinks, leading a rather simple life he is of a consequently better bodily constitution and therefore he promises a more hardworking and strongly builded workman. He must only be let to understand that in seeking, as is the case to-day with him, the jobs of a clerk or a shopman he will have both his position and his mental cultivation at a standstill with no prospect of any future improvement beyond that of a once-in-a-way shabby increase of his miserable salary, whereas by getting trained in some industrial line besides securing to himself the intellectual food which would make of him the man of the day, the man of a healthier and stronger

constitution, the man who would proudly be working in the general machine of the country's welfare, he would daily see himself adding to the reserve capital of independence and of a continual personal progress.

2. When, where and by whom he will be trained ?

Repeated and continual lectures first to already grown up students of the various schools in various public places with practical attracting illustrations by competent and encyclopædical experts appointed by the Government authorities would be of great assistance to them in understanding the usefulness of their embracing an industrial career which would suit their natural ability and inclination. They must see and feel that hand working is not any longer to be considered a low and vulgar and unworthy occupation; on the contrary, it will be a treasure to themselves and a reason for appreciation and admiration on the part of those witnessing their daily improvement. Dignity of labour.

Now referring to your Question No. 44 running as follows : " Do you think that the lack of primary education hinders industrial development?" Well, I am of the opinion that it is so.

Primary education is as essential to the intended industrial labourer and the industrial man in general as to any intended literary man. The more one is educated the easier one gets fit in the line he has chosen as his life occupation, the deeper he gets into the mysteries and particularities of same and the sooner he becomes the master of the necessary experience and knowledge and to crown all the more efficient and successful he proves in fulfilling his industrial duties. Need for primary education.

In my opinion the industrial inspiration and encouragement must begin along with a good primary and more encyclopædical school education.

The Government would encourage and assist in such a wonderful achievement by procuring every lower school with the services of a competent encyclopædical expert teacher, a person whose only duty would be to try and discover the natural inclination of every pupil intended for industrial education and classifying them accordingly would in appointed times weekly give them the necessary inspiring lessons accompanied by series of possible experiments in proportion with the pupils' conception and understanding, encouraging them in their inclination so as gradually to feel more and more interested and present in time an industrial ground ready for a further cultivation which would give forth the efficient workman, supervisor and indigenous expert manager.

The next necessary step would be the establishment of day schools for short time employees or of night schools. (Quest. No. 49.) Half-time schools.

The efficiency of such establishments is widely witnessed in every country under the sun. For we have more than plenty instances of men of world famed technical, philological and scientific distinction who having been of poor circumstances owe their success in life to the assistance they had in establishments of this kind. Besides this the only thought of young lives despising leisure, day time and various night attractions for a persevering and rather tiring occupation in these establishments is a clear proof that a will is at work and consequently the way will surely be found and utilized to a triumphant result.

Further cultivation will be given to the young aspirants in the shape of more important industrial schools where a higher, more analytical and scientific knowledge of the line under cultivation will be surely acquired, where the cases of such knowledge will be strongly consolidated and a spirit of certainty and speciality in the shape of competent supervisorship and expert managership will prevail. Industrial schools.

It goes without saying that the efficiency of the above education would be sealed if commercial lessons would follow for those whose intelligence can afford. To answer your Question No. 80, I beg to say that a course of commercial lessons would make of the industrial expert the perfect expert, the most qualified transactor. For undoubtedly an industrial man of a high grade while producing his articles must be in a position to know also many other things which would enable him to dispose of them more successfully and more satisfactorily. He must for instance have an idea of other markets, other industrial countries, the degree of consumption of the different goods in general, the industrial movement in other places (this latter knowledge would be obtained by now and again visiting such other places where such lines in which he is specially interested are being cultivated). Colleges of Commerce.

In addition he will acquire in the College of Commerce the indispensable for his industrial grade knowledge of industrial and commercial geography, industrial and commercial history, commercial mathematics, science, chemistry and above all the commercial honesty, commercial tact and fairness. An industrial head must necessarily be also a commercial head and he would never be able properly to acquit himself of his industrial duties as a head unless he is a merchant in his mind and soul possessing the above qualities. Unfortunately lack of knowledge of even the elementary commercial notions is the feature of our market state today. It is a well known fact that with the exception of the high grade negotiants a very limited number of merchants can boast of their commercial success as the result of a really commercial behaviour and really tactful commercial transactions. Good and favourable circumstances often account for good commercial fortunes and very often unfair transactions mean the detriment of one or more fellow dealers or customers, whose interests have been played unfairly for the interest of the cleverer.

Need for commercial honesty.

A merchant to my opinion must be considered as responsible for the fate of his fellow dealers and customers, as a physician for his patients, as a lawyer for his client and a teacher for his pupils, and as no one of these latter is allowed to perform his professional duties unless possessing the respective certificate of competence and ability, similarly a merchant ought not to be any freer in his ways of amassing wealth as is the case very often. Certificated persons approved by competent commercial authorities ought to be the responsible head of every industrial or commercial firm no matter how big or small the firm is, the responsible head in front of the Government, in front of the law, in front of the fellow dealers, in front of the citizens and of the public in general. Merchants of no commercial merit, of no lawful knowledge of their obligations, merchants whose motto is to amass wealth upon wealth, no matter how, number more victims, victims of more pitiful state than those caused by an unqualified lawyer, a charlatan and an unfit teacher. Municipalities and local boards would effectively remedy this awful condition by requesting from every industrial or commercial firm to show the responsible head as above and only thus these disgraceful results would be avoided.

Finally the question here being of commercial assistance to the industrial development such assistance would indeed make of the industrial expert the ideal industrial personality, the perfect industrial merchant and consequently the more or less perfect man. It is by the acquirement of such persons in a place that adulteration, corruption and bribery would be restricted to the minimum, a spirit of well placed confidence will prevail, making of the place an ideal and model industrial and commercial place, brightly reflecting upon the responsible competent authorities.

Industries capable of development.

The industries which are specially to invite the careful attention of the industrial authorities in this place are those for the cultivation of which the necessary raw materials are natural products of this place. And such industries for which our place offering abundantly the necessary forest, animal and mineral raw mate ials could be developed to the utmost successful point are the following:—

(1) Tannery.—Boot and other leather works factories.
(2) Tanning Extract making. Ameliorated Cutch making.
(3) Soap making.
(4) Paper making.
(5) Fibre industry. Thread manufacture—Weaving Hosiery—Tapestry.
(6) Various kinds of varnish making.
(7) Perfume making.
(8) Sugar making.
(9) Starch making.
(10) Pottery and Plastic art.
(11) Carpentry, Furniture and wood carving.

In many of the above industrial lines the services of capable girls also would be suitably utilized, of girls who by getting in this noble and decent way a paying and satisfactory means of life would be saved from the evil to which they are otherwise exposed and to which an unoccupied and lazy life unfortunately leads them every day.

Trade Representatives.

The industrial development having been successfully achieved the products would be easily introduced into other markets also and compete with those of other producing countries to a profitable extent with the assistance of the different Consuls who will facilitate and protect the industrial and commercial interests of the country they represent by means on one hand of exhibitions of such products in the Consulates themselves and by furnishing on the other hand to the industrial merchants the necessary information concerning the state of the markets and the local industrial improvement and local trade of the place they reside in.

Land policy.

One of the most effective assistance that Government might give to private and public industrial enterprises would be also to grant them the occupation of suitable land by the water side at a reasonable rate and to reduce the freight on necessary raw materials at the minimum possible rate.

In conclusion I beg to express my confidence that a slow but steady process will surely bring the desired favourable results. For Burma, to those who had the opportunity of knowing her before over two decades, as is the case with me, is known to have made strides of considerable importance towards improvement and there must be no doubt that in future also she will not stand back in the general evolution of improvement and progress.

(*Witness did not give oral evidence.*)

Mr. R. R. Pearse.

WITNESS No. 462.

MR. R. R. PEARSE, *Managing Director and Chairman of the Board of Directors of the Burma Chemical Industries, Limited, Rangoon.*

WRITTEN EVIDENCE.

I shall confine myself to a statement of my own personal experience, by submitting some of the correspondence I, as Managing Director and Founder of a new industry, have had.

1. With the Local Government (Docket A).

2. With the Director General of Commercial Intelligence, Calcutta (Docket B).

3. Some criticisms on this correspondence, with some suggestions of a remedial nature as invited, as well as touching on a few other of the questions under consideration.

Concessions for water supply.

Docket A.—This is only a part of the correspondence with the authorities, relating to the vital question of the Burma Chemical Industries, Ltd., water supply at their factory.

This Company's application for the promised lease of five tanks adjoining their factory, although sympathetically regarded by the Government, was summarily vetoed by the Rangoon Municipality (possibly influenced by mis-statements of interested parties), as also were subsequent applications for the lease of three tanks, the lease of two tanks and finally the lease of one tank, although in the latter case, the Company had at considerable expense practically created a tank out of a tank site.

Again, the Company's application for a lease of Government land for a more suitable site (still vacant) was vetoed by the Port Commissioners of Rangoon for no adequate reason.

I would suggest, therefore, that in similar cases, the power of summary veto possessed by Municipalities and Local Boards be curtailed to such an extent that any such veto be accompanied by a detailed statement giving the reasons therefor, with the opportunity being given to applicants to refute the same.

The attitude taken by the Rangoon Municipality is,—that although the obligation of their supplying water within Municipal limits is admitted, they favour the non-tax-payer and ignore the claims and urgent necessities of the highly assessed tax-payer, even at the risk of strangling a new industry, which is officially admitted to be engaged in munition work at the present time.

Commercial intelligence.

Docket B.—This correspondence is the result of an enquiry from the Ordnance Department of the Government of India, for materials urgently required for munitions of war.

It will be seen that as a result of this correspondence, and after a delay of six weeks, the information obtained was practically *nil*.

I have on previous occasions written for information to His Britannic Majesty's Consuls at Genoa, Yokohama, Rio de Janerio, and have on each occasion received an early detailed reply to each question asked.

The anomaly is, that such information cannot be obtained from any British possession, although previous to the war I was able to get the desired information through local German sources.

The necessity is therefore obvious for the establishment of an efficient Bureau of Commercial Intelligence in the Province, open to the public for interviews as well as for written correspondence.

I suggest—1. That such an institution be under the direction of European experts. This would be a course more efficient and economical than the detailing of Indian civilians for the post.

2. That a technical library be attached to this bureau not only for the guidance of the directorate, but for reference too by members of the public, showing their *bonâ fides*. I estimate that such a library would only comprise from 150—200 volumes.

3. That this bureau be affiliated with the Department of the Government Analyst, and that an applicant with a well considered scheme, be entitled to a free analysis of raw material, with tests, etc.,—this free analysis, however, not to apply to periodic tests or Mining Minerals.

4. That on a well considered new commercial scheme being found to have favourable prospects, the directorate may be empowered to recommend the proposition to the Government for support under any of the headings specified in the list of questions (page 2), but more particularly for a financial backing and also some preferential treatment as regards import duties on machinery or raw material, as well as some assistance in marketing products. With such a Government Imprimature, I am of opinion that the present difficulty of raising capital due to the recent series of commercial fiascos in Rangoon would be greatly overcome.

There are objections in such a case to Government appointed directors and auditors.

I have studied the question of possible new industries fairly closely. These could certainly be developed with the necessary Government assistance.

Should I be examined on the subject of a Government control of shipping freights, I should prefer to make a statement *in camerâ*.

A

No. 527-3V—341, dated Rangoon, the 10th September 1914.

From—J. P. HARDIMAN, Esq. B.A., I.C.S., Collector of Rangoon,

To—The Secretary, The Burma Chemical Industries, Ltd., Rangoon.

With reference to your letter, dated the 22nd of July 1914, I have the honour to inform you that the Municipality object to the issue of a lease of the five tanks to the Company. In these circumstances I regret I am unable to issue the lease asked for.

No. 48, Sule Pagoda Road, Rangoon, dated the 16th April 1915.

From—The Managing Director, The Burma Chemical Industries, Ltd., Rangoon,

To—J. P. HARDIMAN, ESQ. B.A., I.C.S., Deputy Commissioner, Rangoon Town Lands.

On the 13th day of May, 1910, a lease was granted by the Secretary of State for India to the Burma Chemical Industries, Ltd., of 1st class Extra Suburban Allotment No. 42 (situate on the south side of the Pazundaung Creek). The lease was for a period of ten years, with clauses of renewal, and the rent fixed at Rs. 2,250 per annum. The acreage was stated to be 272 acres.

On this land the Burma Chemical Industries, Ltd., have erected works for the manufacture of Sulphuric Acid, for which there is a great local demand.

From the first, there has been a steady erosion of this land, caused by the tides. Recently this erosion has become so accentuated and alarming, that Mr. E. C. Niven, the Engineer to the Port Trust, was called in as an expert to examine and report upon the matter. A copy of this report is herewith appended.

From this it will be seen that further rapid erosion is to be expected, and Mr. Niven advises as the only safe remedy, a revetment of the whole of the foreshore.

He estimates the cost of this at Rs. 30,000. This is considerably more than the value of the land, and would average about Rs. 15,000 an acre. One can only judge the value by comparing with recent sales. The latest sale of land on this creek was that of the freehold land of Zaretzky Bock and Co., to Diekmann Bros. The land sold was 34½ acres in extent, amply protected on the foreshore with stones, and with an excellent artesian water supply. In 1911 this land with all buildings, mill machinery and godowns, was put up for auction and the highest price offered was 1½ lakhs. Since then Diekmann Bros. bought the whole property for 2 lakhs, by private treaty. Taking the mill, etc., as being only worth 1 lakh, this leaves 1 lakh for the land, and this averages less than Rs. 3,000 an acre.

Mr. Niven assures us that it is only a matter of time for the whole of this land to be washed away. To give an idea of the extent of the erosion, there were three rows of trees on this land previously. The last are now falling into the river.

The Burma Chemical Industries, Ltd., has during its tenancy expended from Rs. 5,000 to Rs. 6,000 in foreshore protection. The capital of the Company is only 2½ lakhs and there is no cash reserve. Under these circumstances the Company is unable to expend such a large sum of money as Mr. Niven estimates as being necessary, and especially as the land is only held on lease, and not being the property of the Company, no money can be raised on it.

The continued working of the Company's property is of the first importance to the Province. Owing to the war, no further shipments of Acid are arriving from Europe, and on our ability to supply depends the carrying on of the whole of the oil industry in Burma.

The matter is extremely urgent, and the Directors of the Burma Chemical Industries, Ltd., make a strong appeal to the Government, through you, to take the necessary steps to preserve this Government property, and thus guarantee the Company the continuation of their possession of this already much curtailed acreage.

No. 2215-XIII—18, dated Rangoon, the 26th April 1915.

From—J. P. HARDIMAN, ESQ. B.A., I.C.S., Collector of Rangoon,

To—The Managing Director, The Burma Chemical Industries, Ltd., Rangoon.

With reference to your representation, dated the 16th April 1915, I have the honour to state that I am unable to admit that the Government is in any way responsible for restoring or protecting the foreshore of your leased land on the Pazundaung Creek.

48, Sule Pagoda Road, Rangoon, the 16th August. 1915.

From—The Managing Director, The Burma Chemical Industries, Ltd., Rangoon.

To—The Collector, Rangoon.

We enclose a copy of a letter from the office of the Revenue Secretary, in answer to a petition of ours, praying for Government assistance for the protection of allotment land No. 42, in Dawbon, leased by us.

In the course of an interview on Tuesday last between the Officiating Revenue Secretary (the Hon. Mr. W. J. Keith) and our representative, the former naturally confirmed his letter of the 16th ultimo. Our representative was, however, able to marshal an array of facts and figures, which materially affect the situation. After listening to the arguments adduced and an account of our transactions with the Government in this matter, the Hon. Mr. W. J. Keith expressed an opinion that we had an equitable claim and suggested that we might have a fair chance of success provided our application for Government assistance were presented in a different form.

We therefore set forth for your consideration a recapitulation of the facts brought to the notice of the Revenue Secretary.

At the time of the inception of the Burma Chemical Industries, Ltd., there were only two sites vacant near Rangoon suitable for a chemical factory, and these were both on the Pazundaung Creek.

The Company applied to the office of the Collector of Rangoon for the lease of what was considered the most suitable site. This was a shipbuilding allotment, situated below Zaretzky Bock and Co.'s rice mill. A reply was received from a Mr. Stevens, who was apparently the officiating officer in the Collector's office, to the effect that this land had been promised *verbally* to a Mr. H. P. Cameron, who subsequently obtained the lease. The Company then applied for a lease of another shipbuilding allotment, situated opposite Mohr Bros.' Upper Mill. For some inscrutable reason, this application was vetoed by the Port Commissioners.

The abovementioned Mr. Stevens, on being again applied to with the idea of obtaining an alternative site, recommended the land at present occupied by us. Mr. Stevens definitely stated that an application on our part for the lease of the tanks adjoining this land, at a nominal rent, would be granted at once, the application being only a matter of form. He pointed out that by taking over this land with the tanks, we should obtain the necessary water supply without the expense and risk of putting down artesian wells.

This definite promise on the part of a responsible Government official, as far as our representatives were able to judge, decided the issue. At this time the land was in the possession of a Mr. Pappademitriou, a Greek hide merchant. After negotiations, in which Mr. Stevens took a prominent part, the Company purchased the lease from the lessee, paying in all Rs. 6,835-4, a considerable portion of which was understood to be for unpaid rent. Possession was taken of the land, work commenced, and an application made for the lease of the tanks. Tank No. 1 at the back was in a state of disrepair and overgrown with weeds. In the full expectation of the fulfilment of Mr. Steven's promise, the Company expended approximately Rs. 900 in cleaning out this tank, deepening it and repairing the bund. To the dismay of the Managing Directors, not only was the application for the lease summarily refused but they were personally severely reprimanded by the officiating Collector for trespassing on Government land and interfering with No. 1 tank. By this time the Company was committed to this site as construction work was far advanced. The problem of water supply became urgent, also the erosion of the river bank. We made two attempts at a cost of several thousands of rupees, to obtain water by drilling, but without success. We were thus forced to purchase water, and our expenditure on this item up to the present, including concrete reservoirs, piping, etc., has cost us Rs. 12,533-5. We are at present paying Rs. 2,000 a year for our water, and this supply is not guaranteed as permanent. According to our Balance Sheets, we have expended Rs. 8,572-9 on foreshore protection, including the sum of Rs. 750 paid for expert advice. Up to a year ago, we were able at this considerable rate of disbursement to hold our own, but during the past year we have been unable to do so, there being apparently some alteration in the ebb current which may or may not be due to the Railway Co.'s pier construction higher up the creek. In view of the inevitable loss of land by this erosion, we obtained the best expert opinion, and on his report appealed to the Government for assistance, which has been refused.

We have repeatedly endeavoured to purchase or lease paddy land adjoining our works, but unsuccessfully. This is not to be wondered at, as the present proprietors are well aware that within a comparatively short period they will obtain an extended and valuable river frontage in the natural course of events, due to the erosion of the bank. This erosion must cease at some time but certainly not until our land has been carried away.

We are paying a yearly rental of Rs. 2,250. The amount capitalised at 6 % equals a sum of Rs. 37,500. This is a Government asset in process of destruction.

In the event of our expending a sum of Rs. 30,000 on the necessary foreshore protection scheme, even could we borrow the money, we should certainly have to pay at least 6% for the accommodition. This would mean an addition to our rent of Rs. 1,800. It is estimated also that maintenance of the revetment would cost Rs. 1,000 a year. These combined sums represent to us a rental of Rs. 5,050 a year, which is absurdly high, being about half the value of the land as freehold.

It is admitted that this land was leased by Government at a time when land values in Rangoon were at their zenith, as a result of the organised scheme of unnatural inflation of values known as the great Land Boom. At the present time, although land values may be rather below normal, we are paying an exorbitant rent, with *pro rata* Municipal taxes, for which we receive no equivalent benefit. Therefore it is a question for the consideration of our Directors, whether it would not be the best business policy to allow matters to take their natural course, without further expenditure on foreshore protection, until such time as the land becomes untenable, and then to expend the Rs. 30,000 now estimated as necessary for revetment, towards the cost of removing the works to another safer, more economic and extensive site. At present there is not a yard of margin between the river and our back boundary, and extensions of our plant are urgently required, notably for the manufacture of chemical manures for which the Agricultural Department of Burma is urgently enquiring at the present time.

The only indigenous manure in Burma consists of bones, and these have been systematically exported for years past—a most unsound economic practice.

It is admitted that the Government's objection to granting us the assistance prayed for is due to the fact that there is no precedent for such a course. This, however, does not apply to the Local Government's power to remit revenue, as is instanced in the cases of the Burma

Ruby Mines, Limited, and the Mergui Crown Rubber Company, Limited, both being companies represented by capital outside Burma and therefore and having that special claim to consideration possessed by the Burma Chemical Industries, Limited.

Summarising the above facts and information, we desire to submit to your careful consideration the following points :—

(*a*) The continued manufacture of chemicals is of great and increasing importance to the province.

(*b*) At the inception of the Burma Chemical Industries, Limited, on account of unfounded prejudices, we were not granted ordinary facilities for obtaining premises.

(*c*) The land eventually was obtained under a regrettable misunderstanding with a responsible Government official.

(*d*) The present rate of erosion was unforeseenable and is due to recent causes. Up to the present we have expended large sums of money in protecting Government property, but this amount of protection in now insufficient.

(*e*) It is an unsound business proposition from our point of view to expend the large sum of money required in an attempt which may not be successful, to protect land held by us only on lease. This point of view will also no doubt be expressed by our bankers whom it will be necessary to approach to advance the cost of the revetment scheme. If the land was freehold, negotiations would be simpler. Would Government be prepared to consider a grant of the land for a moderate consideration ?

(*f*) It is an unsound business proposition from the Government's point of view to contemplate unconcernedly the destruction of such a valuable property.

(*g*) We are paying an absurdly high rent.

Under these circumstances we petition that we be granted such a substantial remission of our rent (at any rate temporarily) as may be sufficient to pay the interest on that sum of money which must necessarily be borrowed for the execution of the work

Also we petition that we be granted a lease of two of the tanks adjoining our premises, in order that our water supply may be assured for the future.

A petition in proper form for this purpose will follow.

In the event of our petition being granted, we undertake to do our best to protect the foreshore at our own expense.

In the meantime we are making an official application to the Port Commissioners for permission to proceed with the necessary revetment, in the full confidence that the Government will not unconcernedly acquiesce in the strangulation of a small, but economically important company, struggling against such unexpected difficulties.

Dated Rangoon, the 20th August 1915.

From—The Offg. Secretary, the Burma Chemical Industries, Limited,

To—The Collector, Rangoon.

With reference to our letter of the 16th August 1915, we beg to apply formally for the lease of three tanks in the near neighbourhood of our Works at Dawbon and marked C, D and E on a plan of the site herewith.

Recently an application for the lease of the whole five tanks was refused, but as the tanks marked A and B on the plan should prove ample for the water supply for the villagers, we beg that this further application be reconsidered and a lease granted.

Dated Rangoon, the 15th October, 1915.

From—The Offg. Secretary, the Burma Chemical Industries, Limited,

To—The Collector, Rangoon.

We beg to acknowledge your Revenue Department, No. 723-3V—18 of the 12th October 1915, and in conformity with the suggestion therein, beg formally to apply for the lease of the two tanks nearest to our Works and marked B and C on the plan sent with our letter of the 20th August 1915.

Dated Rangoon, the 16th October 1915.

From—The Acting Secretary, the Burma Chemical Industries, Limited,

To—J. P. HARDIMAN, ESQ., B.A., I.C.S., Collector of Rangoon,

With reference to your letter No. 723-3V—18, dated October 12th, 1915, our Works Manager informs us that it is correct that residents of villages adjoining our village do obtain water from the tanks behind our land, but only at the end of the dry season when their own local supplies are exhausted. Boatmen also take water from these tanks, having frequently to cross the creek in order to do so.

As there is abundance of Municipal water, with street hydrants on the Pazundaung side of the creek, we presume that some official obstacle must be placed in the way of their obtaining their obviously natural supply. As unbenefited heavy Municipal taxpayers, this appears to us most unfair.

We send herewith an application *in forma* for the lease of the alternative tanks B and C, as suggested.

Dated Rangoon, the 20th March 1916.

From—The Acting Secretary for the Burma Chemical Industries, Limited, 48, Sule Pagoda Road, Rangoon.

To—J. P. HARDIMAN, ESQ., B.A., I.C.S., Collector of Rangoon.

In reply to your Revenue Department No. 1815-3V—18 of the 7th March, we beg formally to apply for the lease to us of the tank referred to as "C." We regret that you cannot recommend the lease to us of both B and C tanks, as pointed out we were prepared to deepen and repair the remaining tanks so that the requisite amount of water would be available. We understand that it would be quite simple to put them in condition to supply at least ¼ more water than at present.

With regard to the question whether we still desire to lease additional land, it would suit us to lease the plot west of our holding, but the estimated cost of Rs. 4,000 and probably now higher, of removing the squatters, referred to in 347-3V—34112-13 of the 13th September 1913, stands at present in the way.

Dated Rangoon, the 27th June 1916.

From—J. P. HARDIMAN, ESQ., B.A., I.C.S., Collector of Rangoon,

To—Messrs. The Burma Chemical Industries, Ltd., Rangoon.

In reply to your letter, dated 18th April 1916, I have the honour to state that in view of the opposition which your application for a lease has met with, it would, I think, be better if you do not commence deepening the tank, a lease of which you desire, until the matter is settled.

2. I have referred your application to the Municipality and await their views in the matter.

No. 1851-3V—18, dated Rangoon, the 7th March 1916.

From—J. P. HARDIMAN, ESQ., B.A., I.C.S., Collector of Rangoon,

To—Messrs. The Burma Chemical Industries, Ltd., Rangoon.

In reply to your letter, dated the 15th October 1915, I have the honour to state that the Executive Engineer, Reclamations, has ascertained the capacity of the five tanks and this is shown in the statement which follows :—

The quantity of water available from each tank is given under column 3.

Tank.	Actual quantity of water on 15th October.	Water lost in 7 months.	Water available for 7 months.
	1	2	3
A	297,643	148,822	148,821
B	272,269	136,134	136,135
C	260,931	130,466	130,465
D	377,425	188,712	188,713
E	423,175	211,583	211,587
TOTAL	1,631,443	815,722	815,721

Therefore water available from the five tanks is, say, 825,000 gallons.

Water available from three tanks A, D and E :—

A	148,821
D	188,713
E	211,587
	549,121 gallons.

2. You will see that if tanks B and C are leased to you, and A, D and E are left to supply the requirements of the people the available water supply for the people will be 549,121. There are 222 families using the tanks for their domestic supply and assuming that 15 gallons per day which the Executive Engineer reports to be a reasonable figure the quantity required for 7 months of the dry weather would be $7 \times 30 = 210$ days.

$210 \times 22 \times 15 = 699{,}300$, say 700,000 gallons from which you will see that the three tanks A, D and E would not suffice.

3. I regret, therefore, that I cannot recommend the lease to you of the two tanks B and C. If you care to apply for one of these two tanks leaving four for the people, I am prepared to recommend your application.

4. Perhaps your best course would be to move the Rangoon Municipality to instal a pipe to supply the villages along the Pazundaung Creek near your land as suggested in your letter to my address, dated 16th October 1915. The opening to traffic of the new Dawbon Railway would supply you with an additional argument for improving the water supply.

5. I do not know whether you still desire to lease additional land, but I might point out to you that there is —

(*a*) Government short lease and vacant and squatter land east of your holding with a creek frontage, and

(*b*) Government leasehold squatter and vacant land without a creek frontage but facing a proposed 30′ road west of your holding.

6. Your application for a reduction in rent is being considered separately.

7. I regret the delay which has taken place in replying to your letter, but it was sometime before I could obtain the information required. Kindly let me know whether you desire to move further in the matter.

B

Dated Rangoon, the 9th September 1914.

From—The Managing Director, Burma Chemical Industries,

To—J. SWAN, Esq., c/o the Director-General of Commercial Intelligence, 1, Council House Street, Calcutta.

Hearing through the Government Gazette that you have been specially appointed to assist in founding and fostering new industries throughout India, I venture to apply for the following items of information :—

1. Are there any wood distilleries in India for the manufacture of Acetic Acid and allied products ?

2. If so, where situated ?

3. Is there any market in India for :

(*a*) Miscible Naphtha.

(*b*) Soluble Naphtha.

There is no such market in Burma.

4. Is it probable that the Ordnance Department or the Government of India would purchase from us, in the event of our manufacturing the same—

(*a*) Acetic Acid.

(*b*) Brown Acetate.

(*c*) Grey Acetate.

(*d*) Acetone.

(*e*) Pure Teak Charcoal.

5. What are the amounts and values of each of the above enumerated chemicals (charcoal excepted) imported into the Straits Settlements and Malay States ?

6. When will be the next occasion that the Burma Chemical Industries, Ltd., will be entitled to submit samples of their pure Brimstone Sulphuric Acid, and tender for the supply of same to the Government Telegraph Department ?

Calcutta, 15th September 1917.

From—J. SWAN, Esq., c/o the Director-General of Commercial Intelligence, 1, Council House Street, Calcutta,

To—The Managing Director, Burma Chemical Industries, Rangoon.

As my enquiries are limited to Bengal, I have made your letter of the 9th instant over to the Director-General of Commercial Intelligence. I may, however, say that the Ordnance

Department are making enquiries for Acetic Acid and that none is manufactured in Bengal at present.

Calcutta, the 22nd October 1914.

From—A. H. LEY, ESQ, I.C.S., Director-General of Commercial Intelligence,

To—The Managing Director, The Burma Chemical Industries, Ltd., Rangoon.

I have the honour to acknowledge the receipt of your letter, dated the 9th September 1914, which was addressed to J. Swan, Esq., I.C.S., and forwarded to this Department for disposal, and to say as follows :—

1 and 2. So far as I am informed there is no wood distillery in India for the purpose of manufacturing acetic acid and allied products.

3. I have made enquiries but have not been able to get any information to show that wood naphtha is used to any extent in India.

4. I would suggest your communicating direct with the Director of Ordnance Factories, Calcutta, on the subject.

5. There is no information available in this department as to the amounts and values of certain chemicals imported into the Straits Settlements and Malay States.

6. I would suggest your communicating direct with the Director-General of Posts and Telegraphs in India, Calcutta. The delay in replying is regretted.

(*Witness did not give oral evidence.*)

WITNESS No. 463. *Mr. A. H. Morgan.*

MR. A. H. MORGAN, A.M.I.C.E., M.I.M.M., *Mining Engineer, c/o The Bombay-Burma Trading Corporation, Limited, Tavoy.*

WRITTEN EVIDENCE.

My only experience in raising capital for an industrial enterprise consisted in floating a small Motor Transport Co. at the Ruby Mines; capital 1 lakh. Capital.

It was fairly successful and is still in being.

There were no difficulties in raising the money; it was almost entirely subscribed by local people, Europeans and natives, mainly through personal influence, my own and my colleagues.

Natives distrust limited liability companies, a rigorous supervision of the accounts and rules by a Public Trustee might produce more confidence.

Any measure calculated to induce natives to invest more of their capital in companies would be of great help in the development of this province.

Any of these would help industrial enterprises, but it would be most difficult to decide on the merits of each case and to provide against fraud. Government assistance.

This appears to me to be a practical suggestion, the fact of the Government being interested and entitled to scrutinise the accounts would induce confidence on the part of the investors and facilitate the raising of capital. Provision of part of share capital.

The Government Department forced to buy might be unduly exacting while the manufacturer sure of his market might be careless, cease to improve and allow his product to deteriorate. The public interest can be best served by leaving its Government Department free to buy the best articles in open market. Guaranteed purchase.

An industry entirely new to the province might be exempted from taxation on profits at first, but they could not be so favoured if competing with similar enterprises already in being.

Unless the financial assistance is considerable a Government audit conducted according to pre-arranged terms should be sufficient.

I have invariably found that the officials of Government Departments requiring scientific and technical knowledge such as Imperial Forests, P. W. D., Geological Survey, Land Records, etc., are most willing to give information and assist the public in every way, but I have no experience of any scientific aid provided by the Government to industrial enterprises. Technical aid.

The mineral survey of this province is very incomplete, such surveys as have been made are not very accessible to the public. Industrial surveys.

It should not be difficult for all maps, surveys and reports on the resources of each district to be kept at the court of its Deputy Commissioner accessible to the public on payment of a small fee.

Consulting engineers.

There are Consulting Engineers practising in Rangoon and Tavoy and these people would certainly object to having their living jeopardised by others being provided by Government.

Commercial museums.

The need of a Commercial Museum in Burma, a province absolutely distinct and isolated from the rest of India, seems obvious.

The Museum should be of the "Shop Window" type such as are established by various Colonies and the Federated Malay States in the city of London.

Specimens of fibres, useful minerals, and other commercial products should be displayed; demonstrations of methods of preparation made in public, information regarding prices, markets, etc., should be given freely in reply to enquiries. Space should be rented to manufacturers to display goods and machinery at work.

Maps, plans, catalogues and technical-works should be available for the public to consult on payment of a small fee.

The Museum should be established in a prominent business thoroughfare and the public encouraged to enter.

Exhibitions.

Exhibitions should not be held too often or they will lack novelty and fail to attract. A provincial exhibition in Rangoon once in three years should be very useful.

Exhibitions cannot be made too attractive and popular as every visitor is a prospective buyer and in a lesser degree a prospective seller.

Travelling Exhibitions would be difficult to organise and maintain, the desired result might be attained by holding the exhibitions in Rangoon and excursions arranged for the inhabitants of outlying districts to visit them at Government expense. Burmans are fond of travelling and a cheap trip to Rangoon would be a very popular reward for general good conduct.

Training of labour.

I have seldom met an Asiatic who will learn and practise a handicraft if his primary education is sufficiently advanced to allow him to earn his living as a clerk or broker or something more genteel, so skilled mechanics are usually deficient in book learning, but their trade is a sort of education in itself and they through it acquire a habit of learning and are keen to improve. Burmans and natives make excellent metal workers, they are usually trained under Europeans whose methods, manners and expressions they imitate with curious fidelity.

As carpenters they are very inferior owing to the lack of European example.

Burman and native workmen usually take great pride in the work and skill and are most anxious to learn more; they are severe but fair critics of each others capabilities and insist on their pay being rated accordingly.

They suffer from a lack of knowledge of elementary science and above all of mechanical drawing the alphabet of their trade without which ideas cannot be expressed or understood.

Night classes to teach mechanical drawing and the elements of construction would be of great use to mechanics on whose efficiency all industrial development must depend.

Technical Schools.

Technical schools are of great use in training managers and teachers but they do not reach the actual operative.

They cannot turn out properly skilled men, all crafts must learn by actual practice while the learner is still young.

The short time worker is a nuisance in a workshop and few workmen can earn their living by working short time so day schools are not successful.

It is the duty of every manufacturer to train Apprentices and it should be made compulsory for those assisted by Government to employ them.

Director of Industries.

A Director of Industries is certainly required in Burma; he should have control of the Commercial Museum, act as adviser and general inquiry agent, and do all he can to introduce fresh industries and foster those in existence. He should have technical qualifications and not be an I. C. S. man as the purely literary training of these gentlemen render them out of touch and sympathy with money makers and inclines them to look on the "pursuit of wealth" as something vaguely disreputable.

Industrial Publications.

See remarks *re* Commercial Museums. The Government publications are not sufficiently advertised and not very easy to procure, frequently out of print, can only be got in Calcutta, etc., if a technical library were attached to the Commercial Museum copies might be kept there for the public to consult.

Patents.

The Indian Patent Office records should also be available in Rangoon.

Hydro-electric power surveys.

Some years ago about 1908 a circular was sent round to the Deputy Commissioners asking for particulars concerning the waterfalls suitable for hydro-electric installations in their districts.

I have not heard that the information collected was ever published.

The amount of water power available in this province is very considerable. I know of many streams aggregating many thousands of potential horse power now running to waste.

I designed and installed the hydro-electric plant for the Burma Ruby Mines, Ltd., which I believe was the first to run in Burma; a 7 mile, 300 K. W. transmission which has worked successfully and continuously for the last 19 years.

The difficulty in gauging the streams throughout the seasons would render a complete survey expensive, but a list of the chief falls say those giving 10,000 K. W.'s might be made and published.

The law on the subject seems indefinite; as far as I know there are no special rules or rates for water power concessions, each application being considered independently.

Owing to the lack of a local demand for nitrates, aluminium and woodpulp the chief products of hydro-electric plants and the small demand for power and lights, the great majority of the waterfalls of this province are likely to remain unharnessed.

General. I have been a resident of this province for thirty years and seen much progress made in that time but consider that the progress might be accelerated. The generally accepted contrast between the development of Burma and that of neighbouring provinces, Ceylon and the Federated Malay States, is rather humiliating to a resident of the first named. There does not appear to be sufficient difference in position, climate, resources, or character of the inhabitants, to account for this contrast; it may be due to the difference of policy of their government. That of the Federated Malay States advertises its province and endeavours to attract outside capital and settlers; that of Burma does not.

There have been and probably still are many officials in Burma totally opposed to what is meant by the term "modern progress," who prefer the evils of stagnation to the evils of industrialism, who dread the advent of non-officials of their own race and consider that the interests of the people under their rule would suffer from an influx of outsiders. I consider these fears unfounded and that the communities of this province are quite capable of holding their own and that they would be the first and principal parties to profit by increased progress and prosperity.

There are vast areas lying waste in Burma, the province should be considered as a Colony and the methods of settlement found useful by other colonies should be adopted.

The Great Dominions of the Empire do not consider it beneath their dignity to advertise abroad the resources of their lands, to exhibit their products and do everything possible to attract settlers and capital and while the Government of Burma abstains from doing the same it is open to the reproach of failing in its duty to its people and the Empire.

(*Witness did not give oral evidence.*)

WITNESS No. 464. *Mr. R. S. Dickie.*

MR. R. S. DICKIE, *Manager, Petroleum Refinery, Rangoon.*

WRITTEN EVIDENCE.

Department of Industries. The assistance which Government could give to industries, would, in the writer's opinion, be best given through a Director of Industries in each province with a suitable staff.

The Director of Industries might be a senior member of the Indian Civil Service and his staff would consist of temporary and permanent assistants. The temporary assistants would be junior members of the Indian Civil Service attached for a year or two and the permanent staff would include an analytical chemist, a metallurgist and a highly qualified mechanical engineer.

The lines upon which the department would work might be as follows:—

(*a*) It should prepare a careful survey of the industrial development and resources of the province.

(*b*) It should issue a periodical bulletin at convenient intervals, possibly monthly, which would be its means of communication with the industrial community.

(*c*) It should have a laboratory and assay office at which samples would be tested for a nominal fee, provided full particulars of origin of samples were furnished. Analyses would be published in the bulletin, but not particulars of origin.

(*d*) It should collect data regarding suitable industrial sites and might have powers to assist the acquisition of land for industrial purposes.

(*e*) It should institute tests of competency or examinations for various classes of skilled labour and might include a labour bureau to act as intermediary between employés and employed. The bulletin might be made self-supporting by advertisements.

(*f*) It should have a museum of the industrial products of the province.

(*g*) It should have a well equipped library kept up-to-date and containing standard technical works and a reading-room with the more important technical papers. A small fee might be charged for the use of this.

(*h*) It should act as intermediary between the industrial community and Government, and no legislation affecting industries or rules under existing legislation should be introduced without reference to the department.

(*i*) It should have a representative on the Chamber of Commerce, on the Railway Board, on the Boiler Board and on any other provincial boards affecting industries. The Director should be *ex-officio* a member of the Legislative Council.

(*j*) The experts of the department might be consulted on payment of a fee by those requiring their assistance.

The writer believes that the institution of a department on the foregoing lines with the frankly avowed policy of encouraging and assisting industry would lead to a very marked extension of industrial activity.

Pioneer industries approved by the Director might in exceptional cases be given a virtual monopoly for a short period, say, three to five years. In such a case it might be possible to arrange for a portion of the profits above a certain percentage to revert to Government, in a similar manner to the excess profit duties. Special encouragement should be given to cheap sources of power and fuel, the want of which is probably the greatest obstacle to industrial extension in Burma. This might take the form of a prize for a suitable producer gas-plant utilizing paddy husk, saw dust or coal mined in Burma. A rebate of the duty on oil for such quantities as are used in internal combustion engines might also be beneficial. Electrical undertakings to supply power for industrial purposes should be specially encouraged, provided the unit rate to be charged was low.

Training of Supervisors. The work now being done at the Government Engineering School, Insein, deserves to be extended as regards the training of young Burmans as mechanical engineers: the men turned out are very promising Very useful assistant analytical chemists are being trained at the Rangoon College and they should be a distinct asset to industry in the province. Something should be done to show the qualifications of the so-called skilled labourers. Fitters, turners, drillers, moulders, bricklayers, concrete layers, carpenters, rivetters, tin smiths, etc., vary from very good to very bad and there is nothing to distinguish them until tried.

Patents. It should be possible to file an application for a patent in the province and a file of patent specifications or abstracts of the same might be available in the suggested Department of Industry.

(*Witness did not give oral evidence.*)

Mr. W. Nuding.

Witness No. 465.

Mr. W. Nuding, *Managing Director, Messrs. Foucar & Co., Limited, Rangoon.*

Written Evidence.

Registration of partnerships. Registration is, I think, desirable to enable traders to know with whom they are dealing. If names of partners were placed upon business paper it would help to carry out this object.

Shipping freights. Conference rings with their deferred rebates prevent competition and lead to higher freights than may be necessary to ensure fair return on capital invested in ships, and thus help to retard trade progress.

Forest Department. I do not know what the policy of the Forest Department as to industrial enterprise is.

Any policy which would be calculated to engender a feeling of uncertainty and insecurity to the capitalist is likely to discourage capital being attracted to the country, and, in the long run, might not be in the interests of the Forest Department itself. Continuity of policy is desirable.

Concentration of special kinds of trees. The cost of extracting forest produce might be reduced by providing district roads.

Bamboo forests might be cleared in suitable areas and special kinds of trees of the more valuable species planted intensively.

Transport facilities. Deficiency of roads might perhaps be overcome by annual allotments given for road building in each Forest Division. The roads to be built where necessary to tap the more valuable parts of the forests.

(*Witness did not give oral evidence.*)

Mr. J. E. S. Nisbet.

Witness No. 466.

Mr. J. E. S. Nisbet, *Forest Manager, Messrs. Steel Bros. and Co., Limited, Rangoon.*

Written Evidence.

Policy and working of the Forest Department.

Suggestions and criticisms. The Forest Department as at present constituted is composed of a highly educated sylvicultural staff and even judged from that point of view is in my opinion understaffed,

They have no practical experience of the various difficulties connected with any commercial enterprise, market requirements and extraction problems so cannot, I think, fully appreciate points put up by lessees and traders, even if they had the time to devote to such items.

I therefore consider the cadre should be strengthened by a branch composed of men with such training who would have the same status as the sylvicultural staff and in no way be considered subordinate. This branch should arbitrate on all questions put up by the Forest Department which affect timber merchants and likewise on commercial aims and requirements affecting the technical side of forestry.

In my opinion this would tend to remove the present lack of co-operation between officers of the Forest Department, who are responsible for the conservancy of the State forests, and merchants whose business it is to extract the marketable yield to be obtained from same.

It should also be laid down that final interpretation of clauses in ageements is not to be made without both parties to same being allowed to state their case before the official appointed to decide the point in dispute. No feeling of security for heavy capital outlay can be felt so long as the Department can alter radically or otherwise, the terms of a contract lease.

To discuss the subject in more detail I consider that:—

1. The present system of issuing only prepaid licenses for unreserved woods should be abolished in the case of reliable traders. The necessity to prepay royalty prevents a man getting the full advantage of his capital and so of course curtails the scale on which he can work. Few traders own the buffaloes they employ in timber extraction so have to hire animals, the owners of which demand an advance of not less than Rs. 50, more often Rs. 100, per pair. Were the trader allowed to pay royalty when his timber reaches a Revenue Station he could purchase his buffaloes outright, command more power and contract to extract more timber. Government could adjust matters by slightly raising the felling fee, which is also prepaid, and so prevent one man applying for a license for more than he intends to or can extract, in order that others may be kept out, and correspondingly lowering the royalty to be paid when the timber reaches the appointed Revenue Station. The reason for unreserved timber being brought out in lengths seldom exceeding 18—20 feet may be attributed to a certain extent to the lack of sufficient power, so that postpayment of royalty might also have the effect of better and consequently more valuable lengths being put on the market. Royalty should be levied not on the log but on the ton, the present system of levying it on the log has not produced the result probably aimed at, *viz.*, to induce traders to bring out longer lengths in the log—length in all timber being the most valuable factor. Levying of royalty on the ton would tend to correct the present notorious waste in traders' logging; once the main log has been cut from the bole the remaining portion is meantime rejected if it will not yield a log of say 10 to 12 feet.

At present whether a trader takes out a license to extract timber sufficient for one or twenty rafts he is given the same time, *viz.*, one year—the period should be altered proportionately to the quantity covered by the license.

2. To encourage the large firms to take up the extraction of unreserved woods the present intensive working applied to teak would require to be modified until a market had been established for the output.

They should be asked to extract any species they choose to select from within the boundaries of their present teak leases, allowed to select their own trees and extract as much of each as they consider desirable—no penalty being inflicted for what the Forest Officer may term 'waste' and given a fixed rate of royalty on a low basis for a term of at least five years with a rebate on all converted tonnage exported with a view to popularising the woods outside India.

If a five-year lease is decided on, a pre-arranged plan of annually vacating one-fifth of the area should be drawn up so that any improvement scheme the Forest Department has in view can be put into operation unhampered.

3. Whether in the case of lessees or licensees, permission to work timber of a specified kind in a given area should carry with it a similar permission to cut all necessary materials required for actual rafting of the timber, free of royalty, and the Forest Department should give every facility for procuring same—if necessary starting plantations of the kinds of timber used for poles and restricting cutting to persons holding such leases or licenses.

4. Gazetting of drift timber is unsatisfactory as are the regulations attached to the redemption of same. Notices of all drift logs recovered should be printed in English and Burmese and displayed in a prominent position outside the Forest Office of the Division in which the timber was worked so that the owner might be able to trace the whereabouts of his lost property.

Government should not have the right to confiscate same before six months have elapsed from date of such posting.

5. The necessity for frequent Check Stations is not apparent; if Government police the river more thoroughly one main Check Station (say at the entrance to the Yandoon Creek for the Irrawaddy) should be sufficient—in any case the reduction of these Check Stations is desirable as much annoyance and delay is caused by raftsmen having to tie up so frequently.

6. Measurement and classification for royalty at Revenue Stations should not be entrusted to newly joined officers with no experience of the difficulties of extraction or the value of timber and how it is depreciated by natural faults in the log. Treatment at time of measuring at Revenue Stations is bound to be reflected in the timber extractor's logging at the stump—more sympathetic treatment then would encourage the extraction of more of the yield of a tree.

7. Government's sales direct to the Admiralty and Indian Railways deprive firms who are lessees of State Forests of a legitimate market. The transactions are so arranged that the business does not come into the open market so that firms have not even the opportunity of competing. Government having entered into Agreements with firms to work their forests should not encroach on the lessees' outlets.

Measures to reduce cost of assembling raw forests products.

Firstly, it is essential that Government build cart roads and lay down railways into the heart of the forests, without this nothing can be done. Secondly, freights and scale of weights over the Burma Railways system should be adjusted on timber in the log, while as regards output placed on the market through the various waterways restrictions regarding removale passes, drift and Check Stations referred to under the previous heading should be removed.

Concentration of special kinds of trees.

This can be answered only by officers of the Forest Department though personally I see no insuperable difficulties in concentrating as indicated.

The problem as to how and where the classes of timber required for rafting poles can best be cultivated is one of extreme urgency. Easily accessible stocks are yearly becoming more difficult to locate and prices have consequently risen enormously.

There appears to be no economical manufactured substitute.

Transport facilities.

I have yet to learn of any forest transport facilities. Beyond cutting bridle paths to facilitate officers of the Department getting about their Divisions I cannot recall anything done by the Department which could be termed a transport facility. The large firms annually spend considerable sums of money in improving the forests—principally as regards waterways—but have had no encouragement to build roads, in fact they occasionally have been discouraged by Divisional Officers taking over either in whole or in part, the roads they have made spending a little money on them and then calling them Forest Department roads along which the transport of all but light kit is forbidden. Royalty is demanded on unreserved timber used by firms in building inspection huts which are always at the disposal of officers of the Forest Department, while delay and annoyance is caused by it being necessary to have the logs measured and other petty formalities gone through.

The cost of all permanent improvements to forests should be refunded by Government until such time as the Forest Department can devote a fair proportion of its receipts from royalty on timber and forest produce extracted to the formation of transport facilities.

All restrictions on the use of timber required for rest-houses, etc., in the forest should be removed.

(*Witness did not give oral evidence.*)

Mr. F. M. Jonas.

WITNESS No. 467.

MR. F. M. JONAS, *Tobacco Manufacturer, 74, Merchant Street, Rangoon.*

WRITTEN EVIDENCE.

Capital.

1. I have had considerable experience in raising capital, with an industrial enterprise such as I control. You sink your own capital in it; if it is insufficient to bring the enterprise to success, and you wish to raise further capital, none of the big Banks will assist. You have either to borrow money from a small Bank, or from private sources, and the terms are very onerous, interest ranging from 9 per cent. to 15 per cent. You have to give a full mortgage on the business, and you are at the mercy of the lender who may demand his money at any moment, and failing payment may assume possession of the business you have created.

2. In Burma there are no facilities for raising capital for legitimate industrial undertakings outside of the Banks. In Japan where industries have increased by leaps and bounds, to assist these the Japanese Government some years ago established an industrial Bank solely for this purpose. This bank has the power to advance money to industries for a term not exceeding five years, the money is raised by the issue of debentures bearing interest at 6 per cent. and the debentures are guaranteed by the Government, such a bank would be of great assistance in Burma, I do not believe in Government assistance to industries, unless, they are of special importance, such as the manufacture of bamboo pulp and paper, where a large amount of capital is required, in the first instance, before the industry can be started. In such an industry where there is more than a likelihood of ultimate success, the Government to attract investors might guarantee dividends during the development of the industry, which should during the period of inception be under Government control, until time proved it was able to run without such assistance and control.

I may mention here that I was a tobacco manufacturer and exporter of Japanese tobacco for many years, and my business as a manufacturer was taken over by the Japanese at the

time of the establishment of the Monopoly in 1904. I was in Japan from 1872 until 1905, so I had exceptional apportunities of seeing how that country established its present numerous industries. I have just visited that country after an absence of ten years.

I should therefore strongly recommend the Establishment in Burma of Commercial Museums say in Rangoon and Mandalay, where different products and manufactured articles, which could be manufactured in Burma from such products should be on exhibition. Particular care should be taken only to exhibit such articles, which could be manufactured or produced in Burma, and not to fill the museum with a lot of articles that would be of no use. Commercial Museum.

The industries that could be established in Burma are as follows in my opinion. The silk industry might be greatly improved and extended, jute and cotton carpets, weaving, matting, basket making of all kinds, lacquer work, pottery, improving paper making in the Shan States, toys, fans and other industries. Most of these are village industries. The work is given out and done in the homes. Why I recommend such industries for Burma, is that the cultivator is idle from the time that the crops are planted until harvesting and from harvesting to planting again, in towns such industries can be carried on.

I would recommend that a few intelligent Burmans be selected and sent to Japan under proper guidance, and there investigate and see for themselves how these industries are carried on, as this class of industry must be conducted by Burmese labour and supervision.

I have been an employer of labour at home in England, in Japan, China and in Burma. I do not find the labour in Burma lacking in intelligence, but at present it is not equal to Home or Japanese labour, and it lacks the application of the Chinaman. Training of labour.

In my own industry I have had to train my supervisors and engineers myself. As far as the Burman male labourer is concerned I find him wanting in thrift and diligence, the women are much better. I strongly advise that the young Burman should be taught in school these two qualifications of a good workman.

In the special industry I am engaged in the tobacco trade, I strongly recommend the employment of an expert (American for preference) to instruct the growers in the growing, but more especially in the curing and marketing of their tobacco, the lax manner in which this is now done causing considerable loss, and also giving the tobaccos a bad name when exported. There is no reason in my opinion why Burma should not be one of the largest producers of good tobaccos in the British Empire.

(*Witness did not give oral evidence.*)

WITNESS No. 468. *Mr. L. Dawson.*

MR. L. DAWSON, *Bar.-at-Law, Managing Director, Dawson's Agricultural Loan Company, Limited, Pyapon, Burma.*

WRITTEN EVIDENCE.

Agricultural Banking in the Delta of Burma.

I shall take advantage of paragraph 4 of the instructions and instead of submitting a series of answers to questions, I shall make a connected statement, based on my practical experience and knowlege of the only matter I may be in some degree competent to express an opinion and which deals with the subject of financing agriculture in Lower Burma and particularly in the delta.

I am the Managing Director of a small bank which was incorporated in 1914, and which is the first joint stock bank that has opened in the mofussal of Burma for the purpose of financing the agriculturist. The enterprise is therefore something of a pioneer in the field of agricultural banking.

The capital of the bank is small, *viz.*, Rs. 4 lakhs, and this is divided into 2,000 ordinary and 2,000 preference shares. Of this capital three-fourths has been paid up. The business was carried on by me on a proprietary basis before it was incorporated and the capital was raised privately from depositors who held deposits before incorporation and who were guaranteed a minimum cumulative dividend of 8 per cent. with the right to share in any surplus profits to the extent of 25 per cent. The Company did not go to the public for its shares, because, as it happened, it could raise a sufficiency of capital from within. If, however, the formation of the Company had depended upon public subscription it is probable that it would not have been floated. The conditions of agricultural finance are not well understood and the public has little confidence in mofussal enterprises of this description and is biassed in its judgment by the views of professional bankers in cities who are conservative in their ideas and have deep-rooted prejudices against the class of security that obtains in the mofussal. It was necessary to find an enthusiastic circle of friends, who, convinced of the possibilities, were willing to risk their money; and in this respect the vendor was fortunate. But, even so, the flotation was achieved, only because the shareholders were protected by preference rights and had a high rate of dividend, with the right of participating in further profits, guaranteed. In the event of a winding-up therefore the loss, if any, would fall entirely on the vendor; for,

he was paid in ordinary shares and not cash and more than one half of the par value of these shares had already been sunk by him in the working capital of the business.

The shares are held as to one-third by people resident in Scotland and as to two-thirds by Scotsmen resident in Burma.

The bank was incorporated in October 1914, after the outbreak of war and the present is the third year of its incorporation. Notwithstanding the war, the bank has justified the expectations its share-holders entertained of it and has attained the position of a successful pioneer: but its sphere of usefulness is capable of being greatly enlarged and its capacity for development is so considerable that the fact that even greater development has not taken place must be put down to the causes already referred to in connection with the difficulty of raising capital.

1. *The agricultural, which is Burma's chief industry, is hampered by the conditions under which it is financed.*
2. *Existing attempts and methods of dealing with this situation are partly good and partly indifferent, but are very inadequate.*
3. *Proposals for improving the financing of the agricultural industry of Burma and the nature of Government assistance that is required to carry them out.*

I purpose to examine these three propositions in their orders.

1. *The agricultural, which is Burma's chief industry, is hampered by the conditions under which it is financed.*

Rice is the chief crop of Burma, but I am only concerned with the financing of that branch of the industry which consists in the production of the crop and with the producers' point of view and my experience is confined to Lower Burma and particularly to the delta, where the bulk of the crop is raised.

The business of financing this great crop has hitherto been in the hands of the Chetty, a money-lender who hails from Southern India and who has no particular aptitude for agricultural banking. He is essentially a money-lender who is concerned with the realizable value of his pledge, and with that only. He has done much for Burma because he filled a place and supplied a want when there was no one either ready or willing to do it. But his limitations are both numerous and obvious. I shall indicate them.

1. He is not interested in agriculture itself and questions of the improvement of the soil or of improved husbandry do not appeal to him. He makes no attempt to contribute to their solution and he will not finance such schemes.

2. He does not particularly concern himself with the purpose for which a loan is raised, or see to it, that the loan is applied to that purpose.

3. He is not contented with legitimate business, and touts for loans and encourages the taking of them for unproductive purposes if the security is ample.

4. He does not care about repayment in small instalments and does not press for them, as he should, if he were merely a banker.

5. He is not a sympathetic banker and demands payment regardless of the plight of the agriculturist or his ability to pay and generally makes the conditions of payment more difficult when, in the circumstances, they ought to be made more easy.

6. He is unbusiness-like. He seldom grants receipts or delivers up cancelled documents and encourages rather than discourages unbusiness-like methods.

7. The temptation to overreach the customer in technical matters, proves almost too great to be resisted by him.

8. He is relieved every three years by a new agent and the system involves something like a triennial winding-up of the firm's local business. There is, in consequence, no guarantee of continuance in the financial relations between customer and banker, which are often seriously dislocated by the caprice of the agent's successor.

9. His business is an unregistered partnership.

10. His rates of interest are very high.

The large bulk of the Burma crop is still financed by the Chetty and the agriculturist has maintained himself in spite of, rather than because of him. He is as an agricultural banker, therefore, a failure and he is out of date.

The Burman agriculturist wants (*a*) a banker more sympathetic with his needs and aspirations, (*b*) a banker who can give him cheaper and better credit, consistent with good security: and for these qualities, he must look elsewhere than towards Southern India.

The rise in market values of land in Burma, in the last decade, has been followed by a general improvement of conditions and agriculturists have paid the Chetty rates of interest, varying between 24 and 36 per cent. per annum and have survived; but these high rates have prevented him making payments towards principal and thus building up a financial

reserve: so that, bad harvests or low prices may at any time cause a serious set-back in his position.

I may state parenthetically that I am dealing with agriculturists as a class and not those who are nursed by private banks, or co-operative credit societies.

I have been criticised by Mr. Maxwell Laurie, M.V.O., I.C.S., Commissioner of Irrawaddy Division, retired, for understating the case about rates of interest, by not doubling these figures, but I had in mind the Chetty, who is not nearly so heavy in his charges as is the village money-lender, whose rates often run as high as 60 per cent.

Owing to the scarcity of capital and to dear credit the agriculturist in Burma cannot afford—

1. To build up a financial reserve against low market prices:
2. To develop or improve land or bring new land extensively under cultivation:
3. To allow his land to lie fallow:
4. To build barns within which to winnow, thrash and store his crop so as to avoid damage from unseasonable showers:
5. To purchase improved implements or agricultural machinery:
6. To experiment with other than the cheapest manures:
7. To raise good stock:
8. To insure his cattle or indeed anything;
9. To grade his grain:
10. To hold his stocks up when the market is exceptionally low.

There are exceptions, but the above, I think, fairly represent the prevailing conditions of the agriculturist. He is hampered at every turn by the want of capital and the dearness of credit and it would be interesting to know what other great productive industry in the Empire suffers from being so badly financed and with which the Burman agriculturist can compare himself.

2. Existing attempts and methods of dealing with agricultural finance are partly good and partly indifferent but are very inadequate.

Government has, so far, employed two methods of assisting the financial conditions of the Burmese farmer, one direct and the other indirect.

The direct method consist of legislative measures and these are the Agriculturists' Loans Act and the Land Improvement Act and the indirect methods are by the propagation of and the fostering of the growth of Co-operative Credit Societies and of a Central Co-operative Bank.

(*a*) *Direct methods*—

The amount lent by Government in the year 1915-16 under the Agriculturists' Loans Act was 13 lakhs for the whole province, but under the Land Improvement Act no figures are given and the amount may be assumed to be negligible. The amount lent under the Agriculturists' Loans Act is officially considered in the current Revenue and Administration Report to be large and satisfactory but this is not the unofficial view, and as regards the Land Improvement Act the report is practically a tacit confession of failure.

The Agriculturists' Loans Act No. 12 of 1884.

This Act was generously conceived. It provided for the relief of agricultural distress and it is clear both from the Act and the rules framed under it that it was not intended that its scope should be limited to cases of distress which are the result of natural causes like flood, drought, cattle disease, etc. It recognized that there might be genuine and unavoidable cases of distress arising from causes other than natural causes or theft of cattle and it recognized no distinction between the holder of 30 acres and the holder of a less area.

Distress of a very acute description might quite easily arise from the crop being marketed at an exceptionally low figure and distress often arises from the failure of others to fulfil their obligations pecuniary or otherwise or both. The "Instructions" under the Act do not recognize such cases and the relief that the Act affords is frittered down to the narrowest specified limits by the "Instructions" and although these do not in theory govern the Act, in practice they do. The Act is only a very modified success. With all due respect, if a broad view is taken, the Act must be regarded as a failure and for the following broad reasons:—

1. Only a proportion, probably small, of those who really need agricultural advances apply for them or get them.
2. And, the converse proposition is also true, *viz.*, those who get the advances are not necessarily those who most deserve them.

It is worthy of remark that the low rate of interest which Government grants is, in this respect, not altogether an advantage. It makes the advances seem like prizes in a lottery and reacts upon the individuals to be benefited as if they were: and, in order to secure them, it inspires the class that is ever ready to seek favours, and to cultivate the Burmese official to exercise its ingenuity and is the wrong class.

The agriculturist, who is simple and who is not versed in Court ways or in office routine, who does not know how to get on the soft side of a Myook, a Thugyi, a Court clerk or even the apprentice who fills up a treasury challan, is apt to be left in the lurch.

In my view the making of agricultural advances except in the case of widespread distress is a branch of activity that is not suited to administration by Government and it is perhaps because Government recognizes this fact that the relief it affords is cut down to such narrow limits.

Considered as a measure of financial aid, this Act with its 25 lakhs outstanding for the whole province strikes me as very inadequate. The Chetties alone have about 50 lakhs in agriculture in this single district of Pyapon and the "distress" that they relieve is perhaps not less acute.

The Land Improvement Act.

This Act is also very wide in principle but the rules framed under it as well as the instructions render the aid it offers illusionary. Rule 13 insists that the applicant's resources to carry out the improvement without a loan should be fully taxed; so that, if his land is free, he should encumber it or even sell a portion to provide himself with the necessary funds and the same rule lays down that no loan should be granted unless there is good security.

The applicant can therefore easily be impaled upon the horns of a dilemma and he may be met in this way. If his land happens to be unencumbered he may be told he has resources; and if not, he may be told that he has no security to offer. It is therefore easy for an over-worked Township Officer to avoid responsibility and to find grounds for rejecting the application in any event.

I find that no loan has been granted under this Act in this district of Pyapon in the last six years. My enquiries did not take me further back. No one would deny that Burma stands in need of extensive land-improvement The Act is obviously a dead letter.

(*b*) *Indirect methods*—

Government is more happy in its indirect methods and its co-operative credit propaganda is attended with the best results. The propagation of Co-operative Credit Societies and the fostering of their growth and influence have far-reaching effects. It is a substantial contribution to the solution of the problem of agricultural indebtedness but it is apt to be forgotten that it is only a contribution and that notwithstanding the success that has attended co-operation in recent years it is a mistake to expect too much from it or to assume that in course of time, with the growth and progress of the movement every agriculturist will respond to its "vade mecum."

Co-operative credit is the best form of credit because it has an ethical as well as a commercial side and is ideal. But it is just because it is ideal and requires temperament and character to conform that it finds its limitations in human nature.

It is easy to be converted to its principles. It is difficult to act up to them. For a hundred that have "faith" there are few who can prove their faith by "works" and the few are not always sufficient to leaven the lump.

In theory, co-operation should appeal to all, rich and poor. In practice, it appeals more to the needy, because they are under the strongest necessity.

In certain districts in Upper Burma, co-operation has thriven and is now a flourishing plant. In the delta, its seed has fallen on stony ground.

Co-operative Credit Societies can do much but they cannot do everything and they are not best suited to solve problems of agricultural indebtedness in the delta and Government should not rest satisfied with this single form of activity or take the view that in the dim and distant future, agriculture will find its complete salvation in co-operation. The needs of the agriculturist are pressing and insistent and if methods equally good are available and offer equal if not greater prospects of immediate or ultimate success, I suggest that measures be taken to investigate these methods and if they afford the promise, which, from my experience, I can confidently maintain exists, they should be adopted and in respect of them, Government should adopt a propaganda not less energetic or enthusiastic than that which it adopts in the case of Co-operative Credit Societies.

I need not add that any such investigation would be welcomed by this Bank and that this Bank would put whole-heartedly at the disposal of Government all its resources and would give all the assistance that lies in its power.

3. Proposals for improving the financing of the agricultural industry of Burma and the nature of Government assistance that is required to carry them out.

(*a*) *Proposals*—

The establishment of banks in the mofussal will greatly assist the financing of the agricultural industry in Burma. The type of bank that will be successful is a mortgage bank that will give the agriculturist long credit. It is due to ignorance of this important point that the press and others advocate the extension into the mofussal (by the opening up of branches) of the type of commercial bank that does business in large cities. Banks specialise as do trades and other professions and the commercial type of bank in a purely agricultural

district would be as much out of its element as a fish out of water and would be of less use than is the Chetty.

Short credit is the basis of the business of a commercial bank, whereas the basis of the business of an agricultural bank in the present state of agriculture in Burma, must be long credit.

I therefore favour the type of a joint stock agricultural mortgage bank as best suited to the needs of the districts.

The requisites.

1. *Type.*—Joint Stock Agricultural Mortgage Bank.

2. It should of necessity be incorporated under the Indian Companies Act so that it would have the advantage of trading with limited liability while at the same time all the safeguards may be had of meetings, accounts and audit.

3. It should be under European supervision or management until such time as its work and administration is thoroughly understood and absolute confidence is assured if entrusted to other hands.

4. The European element in the management should be in very close touch with the people and for this purpose it is necessary that it should know the language and understand the people and have some local influence.

5. It should confine its operations to an area over which it can effectively exercise control.

6. It should co-operate with co-operative credit societies and work in sympathy with them and with the Central Bank.

7. It should have an organization and a system ready to hand and which is easily workable and it should be possible to demonstrate that the system is reasonably sound.

8. It should take the fullest advantage of the work of the Agricultural Department and use its influence to improve husbandry and allocate funds for experimental purposes.

9. While not making credit too facile, it should aim at the cheapening of credit and should attempt to level rates of interest to the level that members pay to their Co-operative Societies.

An incorporated mortgage bank that owes its existence to private enterprise and complies with the above requisites is an institution that, I think, deserves positive encouragement and support. It can do much towards relieving agricultural indebtedness and it can help to forward the best interests of the province and it can reach that large and not uninfluential class which either refuses to open its doors to co-operation or through some defect of character or idiosyncrasy of temperament fails to adapt itself to co operative methods.

It will have a field of labour which will be the complement of the field of the co-operative movement and it is therefore entitled to similar consideration and support.

(*b*) *Nature of Government assistance that is required to carry out these proposals and the nature of Government control*—

Owing to the difficulties of raising capital, the best way to promote the establishment of such banks as have been indicated is for Government to provide a proportion of the capital, say, 50 per cent., of what is considered advisable or necessary and for Government to be content with a guaranteed 5 per cent. dividend and to hold all the preference rights and to exercise its control by holding either a Government audit or such other audit as it may prescribe.

Such a scheme would not commit Government far. A bank on these lines could be opened up in some district headquarters as an experiment and if the results are satisfactory the principle of the promotion can be applied and banks opened up in other districts.

I do not think that Government should be represented on the board of such a bank and it would obviously be undesirable for many reasons: there would really be no necessity, as the safeguards would seem to me to be ample.

I am confident that such a bank would require small capital and that it would be able to get all the funds it required from the public, quite easily.

I do not think that such a bank should be assisted by loans from Government, unless, in the particular district in which it operates, Government should decide to allow it to administer all agricultural loans and do away with the official administration of them.

Loans made by Government for such a purpose should be fully secured and should be repaid promptly once a year. If loans should be required from Government for any other purpose, a strong case should be made out and if granted, should be secured by debentures, so as to afford Government absolute security.

Under this scheme each district bank will be an independent unit and will stand on its own merits.

A proportion, say, one-fourth of the capital, should be locally subscribed and this Bank, which I represent, would be willing (and as the pioneer would expect to be offered) to subscribe in addition to a few founders' shares—a proportion equal to the locally subscribed capital and would undertake to raise locally the proportion of the needful capital.

This Bank owes nothing to Government assistance and has asked for none. It has attained its present development not without difficulty and not without encountering some prejudice, but it has received a substantial measure of support from the public and it is satisfied that its achievement will continue to merit that support and that it has discovered a field of enterprise that offers good investments while at the same time it is helping to develop the agricultural resources of this great country.

(*Witness did not give oral evidence.*)

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CALCUTTA.

WITNESS No. 469.

MR. A. C. MCWATTERS, I. C. S., *Controller of Hides and Wool, Indian Munitions Board.*

(*This witness's written and oral evidence is confidential.*)

WITNESS No. 470.

MR. B. L. MITTER, M.A., B.L., *Barrister-at-Law, High Court, Calcutta.*

WRITTEN EVIDENCE.

Note on the Registration of Partnerships.

In a recent issue of the *Calcutta Weekly Notes* (11th February 1918), I suggested the registration of partnerships. The matter has evoked some amount of public interest and, in view thereof, I beg to explain the suggestion in some detail.

Partnerships can be formed and dissolved in writing, as well as verbally. Deeds of partnerships are, however, rare among Indian traders. These traders have partnership firms spread all over the country and, so long as business is carried on honestly, no difficulty is experienced by people dealing with them. Trouble commences when a partnership seeks to repudiate its just liability and a creditor is compelled to go to law.

These partnership firms are not always managed by the partners. Sometimes, the partners or one or more of them are found to be engaged in active management, but in very many instances they leave the management with *gomastas* or servants. In the latter cases the *gomastas* do all acts necessary for or usually done in carrying on the business of the partnership. A *gomasta* gets either a fixed pay or, such pay *plus* a share of profits, or a share of profits only, in lieu of remuneration.

The capital invested in the partnership generally carries interest, but the rate of interest sometimes varies with the profits, and it frequently happens that a share of profits is paid in lieu of interest. The capital invested may be the money of the partners or of a creditor having no share in the partnership.

The constitution of the partnership or the internal arrangements as to shares, capital, interest and management generally, are unknown to the outside dealer. Such knowledge is unnecessary in normal conditions of honest trade. But it becomes a matter of paramount importance when he is confronted with a dishonest attempt to repudiate just liability and the dispute is to be settled in court.

It is well known that Indian traders of the class mentioned above do not attach much importance to the name of the firm, and changes of name are of frequent occurrence. A firm's name is no guide to its constitution. Very often a minor son's name is tacked on to that of the father or a grandfather, long deceased. There is no method or system in a firm's name from which any safe inference can be drawn.

The difficulty which a stranger has to contend against may be illustrated by the defences usually set up in courts of law.

Suppose A, B, C and D are partners of a firm, the first three only having furnished the capital and D contributing labour and skill as the working partner. D gets a fixed allowance and a small share of the profits as partner. P brings a suit against all the four partners for the balance of the price of goods sold and delivered. A, B, and C put in a joint defence denying that they are partners. D in a separate defence says that he is a mere *gomasta* and he supports A, B and C in their denial of partnership. P has got to prove that A, B, C and D are partners. He calls a number of witnesses who had dealings with the firm for many years and they swear that they always knew A, B, C and D to be the partners. In cross-examination they cannot support their evidence with any definite facts, such as division of profits, for such facts cannot be within their knowledge. They then go on inventing things, *e.g.*, that in some adjustment of accounts all four took part, or that the defendants admitted to them that they were partners, or that all four sometime or other actually took part in the dealings of the firm, such as buying or selling, or giving or taking delivery, or making or receiving payments, or that the defendants always held themselves out as partners and, in short, they invent circumstantial evidence in support of their contention. False documents are produced to connect the defendants with the firm. Besides these, various other shifts and devices are resorted to. Thus, false evidence is given to support a case, true in fact but difficult of proof. To rebut this evidence, the defendants in their turn bring forward another set of mixed true and false evidence to establish their irrelation to the firm. A, B and C's non-participation in the business of the firm is easily proved. D's acts and conduct are not inconsistent with his being a *gomasta*. After careful consideration of a large mass of true and false evidence, the court comes to the conclusion that P has failed to prove that A, B, C and D are partners. His suit is dismissed with costs.

Take another illustration. A, B, C and D are partners. A and B are the capitalist partners, C and D bring in no capital, but get a share each for managing this business. The former have money ; the latter have none. When sued, A and B deny that they are partners. C and D say they are the only partners and that A and B are mere creditors of the firm. The plaintiff notwithstanding a mass of evidence, partly true and partly false, finds himself unable to prove his case against A and B and has to be content with a decree against C and D, which is of no value to him. The impecunious partners are in these cases invariably put forward as the owners of the firm, the moneyed partners, remaining in the background and supplying the sinews of war against the honest dealer.

Instances may be multiplied to illustrate the defeat of just claims and the failure of justice in the trangled mass of true and false evidence.

Leaving aside false oral testimony, books of account and letters are generally produced in these cases. It is a by-word in the corridors of the courts that dishonest traders keep three sets of books—one for their own use; the second for use in courts and in view of possible insolvency and the third for defeating income-tax authorities. Whatever may be the truth about this, it is common experience that false books and false entries in books are much too frequently used in courts whenever the issue of partner or no-partner is raised.

The time and money spent in the trial of the issue of partner or no partner are always large. If truth prevails, the cost is out of all proportion to the benefit. If truth does not prevail, all is wasted.

It has been suggested that the failure of justice indicated above and the mass of perjury and forgery may be avoided by the simple expedient of registration of partnerships. If provision is made for the compulsory registration of all partnerships with the names of all the partners and of all changes in the constitution of firms, and also that none but registered partners shall be deemed to be partners in any court, the waste indicated above may be avoided. Further, persons dealing with firms will then know to whom they are giving credit. Such a provision will obviate the necessity of resort to dishonesty in manner stated above. No law can induce honesty, but it can deter dishonesty by rendering it futile.

The practical suggestion therefore is the addition of a section to the following effect in Chapter XI of the Indian Contract Act (IX of 1872) :—

"An agreement for partnership can be made only by registered instrument which shall contain the names and addresses of all the partners and the date of the commencement of partnership. Any change in the constitution of the partnership, including the names and addresses of the outgoing and incoming partners shall also be registered. Registration as partner shall be conclusive evidence of partnership and no one whose name is not registered as above shall be entitled to claim any right or be liable as a partner in any suit or proceeding."

Explanation.—In an agreement for partnership between a Hindu joint family and a stranger, the *Karta* for the time being shall represent such joint family.

The addition of a clause to the following effect at the end of section 17, Registration Act (III of 1877), is necessary to give effect to the above suggestion :—

"Instruments creating partnerships after the day of 1918 and all changes in the constitution of such partnerships shall also be registered."

I desire to make it clear that the suggestion made in this note does not relate to or in any way affect Hindu joint family firms. There are obvious difficulties regarding such firms. Under the *Mitakshara* School of Hindu Law, for instance, a male child on birth acquires an interest in the family business. It is undesirable, if not impossible, to attempt to interfere with such interest by legislation. The suggestion made in this note relates only to contractual partnerships, such as are governed by the Indian Contract Act. It is necessary to make this point clear. So long as a business is a purely joint family business, with no stranger in it, the suggested registration will not apply. But directly a stranger comes into the business, it becomes a contractual partnership, the two contracting parties being the joint family, as a unit, of the one part and the stranger of the other part. Registration will in such a case be necessary. The joint family in the name of the *Karta* will be registered, and the stranger in his own name. So long as the joint family is regarded as one unit, however much it changes internally by birth or death, there is no difficulty. The business of a single owner need not be registered. Nor, on the same principle, the business of a joint family which is really one unit. But as soon as a second person comes in, the business belongs to two, *i.e.*, the family and the stranger, their relationship as between themselves being governed by agreement and not by birth. Shortly registration will be compulsory if the partnership is contractual. Not so, if the different persons interested in the business acquire such interest by birth and not by contract.

ORAL EVIDENCE, 9TH MARCH 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* In the case of a Hindu joint family, if a *Karta* (head of the joint family) enters into a contract as a partner with a second party outside the family and if a decree is obtained against that firm, and the property of the joint family is attached, can the other members of the joint family raise any objection?—*A.* No, they cannot, because the share of every member of the joint family is liable for the legitimate debts incurred by the *Karta* for the benefit of the family or for debts incurred in the business.

Q. Can you tell me why, if the whole matter is so easy, so much objection is raised by every Indian community, whenever the question of the registration of partnership deeds has been brought up?—*A.* I don't know whether this question ever came to a head. Casual suggestions were made from time to time; but, so far as I know, the suggestion was never brought forward in a serious manner before the public.

Mr. C. E. Low.—*Q.* You mean the suggestions now put forward by yourself?—*A.* Yes.

Q. You don't mean that the suggestion in regard to the registration of partnerships was not put before the public?—*A.* I mean that, so far as the public is concerned, it has never been put. I have heard that Chambers of Commerce have discussed the matter many times before; but so far as the public, or the legal profession is concerned, this matter has never come up before.

Hon'ble Sir R. N. Mookerjee.—*Q.* I take it that your opinion is practically the opinion of all the senior members of the bar?—*A.* My opinion is shared by a large number of members of the bar and solicitors with whom I have talked. I cannot say that it is unanimously held.

Q. You discussed this with your other colleagues?—*A.* Yes, with many members of the bar and many solicitors and vakeels, since I wrote that letter to the *Calcutta Weekly Notes* on the 11th February. I have shown my note to a number of my friends, who approve of the suggestions generally; but they make certain other suggestions. For instance, in my note there is no provision for existing partnerships. That matter has been discussed by members of the bar, and I am prepared to uphold my views, if I am asked any questions on the matter.

Q. What you say in your paper refers to the registration of partnerships for the future; but is there any remedy in the case of those who are already doing business as firms?—*A.* I don't want to make registration compulsory in the case of existing partnerships; under the present law, existing partnerships come under the category of optional registration, and I think optional registration is quite enough for dealing with existing partnerships. There are serious objections to compulsory registration with regard to existing parnerships. If I may be permitted to explain, I would state my reasons under 4 heads. First of all, there is the retrospective effect of legislation which is always unsatisfactory, as it works harshly. Secondly, the evils sought to be met by compulsory registration can be met by compelling existing partners to execute and register written instruments of partnership. This latter point requires a little explanation. The parties who suffer most are capitalists and bankers, who advance money to partnership firms. Take, for instance, the case of a Calcutta bank which advances money to, say, a Sirajgunge jute firm. At the beginning of the jute season these firms want capital, which they pay back at the end of the jute season. A bank may very well say to these Sirajgunge jute merchants, "Unless you register and reduce your partnership into writing, we are not going to advance you money." In that way it can put pressure on existing partnerships, and compel them to register. Again, the partners themselves may be interested in reducing their agreements to writing and registering them. For instance, if there is a provision that in future none but registered partners can bring suits or assert any claim in a court of law, unless their names appear in the register, they will find it difficult to bring suits for partnership accounts against each other without registration. Existing partners will be interested to compel their co-partners to register, because in that case they will be perfectly safe in future when bringing suits for partnership accounts. I am thinking of suits as between partners themselves. Capitalists can compel registration by refusing to advance money without registration of partnerships, and partners can compel co-partners to register; so that the evil which is sought to be met by registration, if left optional to existing partnerships, can be met in that manner. They will get used to register partnerships. Partnerships can be registered now, under the existing law. The Registration Act provides for it in section 18; but people do not register, as a rule, because registration of partnerships is not, first of all, enforced by law, and, secondly, is not common. Once you make registration compulsory, people will take to registration even when it is optional.

Mr. C. E. Low.—*Q.* It is merely ignorance which has prevented optional registration so far?—*A.* Yes. Then my third reason is this. Compulsory registration is likely to be oppressive to small partners, who, through ignorance or force of custom, may not register. They will then be unable to enforce their rights for want of registration. The fourth head is, that under the existing law, in the absence of a contract to the contrary, the death of a partner *ipso facto* dissolves a partnership; therefore this optional registration of existing partnerships cannot last beyond a generation. After 20 or 30 years all existing partnerships are likely to come to an end, and the intervening period will be quite enough to enable people to get familiar with the idea of registration; so that by not interfering with existing partnerships, the law, as regards compulsory registration, will gradually become known to people and there will be no sudden change.

Q. Supposing a partner dies, does the whole partnership come to an end?—*A.* Yes, in the absence of a contract to the contrary.

Q. Supposing one partner transfers his two-anna share to another one?—*A.* He cannot do that, except with the consent of the other partners. In that case it would be a new partnership, a fresh start in respect of all the partners.

Sir F. H. Stewart.—*Q.* Do these small people, whom you refer to, have any actual partnership agreements?—*A.* Among Marwaris, you sometimes find little bits of yellow or pink paper on which they write down the terms and particulars of the partnership, the internal arrangements. That is not very common.

Q. Would those papers be recognised in court?—*A.* Yes, but more often than not, the arrangements are verbal.

Q. It is clear to us that the case of these small traders and shopkeepers presents difficulties. Would it be possible to exempt them from the provision of legislation?—*A.* That would be very difficult: where would you draw the line? A partnership might begin with a very small capital and grow into a large business, and it would be impossible to draw a hard and fast line that, up to a capital of, say, Rs. 10,000, a partnership is registrable and below that it is not. That would interfere with the growth of partnerships; and besides, partners would not like to have their internal affairs, as to how much capital is invested, and so on, known either to traders or to the public. It is not like the case of a company, whose internal affairs are revealed in their Articles of Association.

Q. I suppose the *Karta* is recognised in law as the head of a joint family and can sue and be sued?—*A.* Yes, in his own name but on behalf of his family. He represents the family.

Q. You say you have talked this over with a good many barristers and solicitors. Hindu gentlemen, I suppose?—*A.* Yes, and English also.

Q. English opinion has always been in favour of this question of registration, generally; but what would Hindu lawyers say about it? Would they fall into line with your ideas?—*A.* Yes. I have not received any serious objection to my suggestions up to now. Objections of a political nature have been raised, and it might be worth your while to consider them. One gentleman told me that if you make registration compulsory, then outsiders, *i.e.*, non-Indians who do not want trade to develop in this country, or who want to have complete control over the petty trade of the country, may come to know who the people are, who are engaged in trade. In that way you would give them a handle to control or dominate petty trade.

Q. You will agree that that is a very far-fetched idea?—*A.* Yes. I do not share the apprehension. It cannot be the intention of either the Government or the English merchants here that trade should not develop in this country.

Q. The European point of view is that registration is necessary in the interests of Indian firms. At present a great many European firms and banks are rather reluctant to do business with Indian firms, because they don't know who the members of those Indian firms are?—*A.* Yes. I will give you an instance. There are commission agents, Marwari as well as Bengali, who deal very largely with up-country dealers. They advance large sums of money to these dealers, and they find that whenever there is the question of partnership raised in court, they lose their money, because they cannot know who the partners of these dealers are. In making my suggestions I was not thinking of European merchants and banks so much as I was of Indian commission agents in Calcutta, who advance money to up-country dealers and find difficulty in realising their money.

Q. And, therefore, they charge proportionately a much higher rate of interest?—*A.* Undoubtedly, because they always run greater risks.

Q. Have you any business experience as well as legal?—*A.* No, I have no business experience.

Q. Have you studied the fairly recent Act at home—the Registration of Business Names Act?—*A.* I cannot say I have made a special study of it.

Mr. C. E. Low.—*Q.* Where do you propose that this Act should apply?—*A.* Everywhere in British India.

Q. One other political objection occurred to me, because it had, to a certain extent, been taken already, and that is, that at present Indian firms derive certain advantages from their knowledge of the bazaar, which is set off against the advantage derived by European firms from their knowledge of shipping and of foreign traders. It was objected that you are depriving Indian traders, to some extent, of this advantage.—*A.* How are they deprived of it?

Q By levelling up in respect of their knowledge of the bazaar. I am not asking your opinion of the force of that objection, but do you think it is likely to be pressed much by politicians?—*A.* I don't think so.

Q. Turning to the proposal itself, you are aware that there are many tens of thousands of very small partners: say, a couple of durzies, or one or two men keeping a grocery shop, not only in Calcutta but all over India. Sometimes they are joint families, but sometimes they are partners. You realise that your proposal would make it compulsory for all people of that sort to be registered in future. Don't you think that would be difficult to accomplish?—*A.* I don't anticipate any difficulty, because we know that when one or two cottas of land are sold, it is often registered, although it is optional in the case of land under the value of ₹100, yet registration is very common.

Q. A great many of these people are very ignorant, and there is not the same tradition at present about business as there is about the transfer of land. Take the case of Mahomedans, two Mahomedan brothers. They are not usually joint in estate?—*A.* They may or may not be.

Q. In a very large proportion of Mahomedan family businesses, it would require registration?—*A.* The family business would not, because by custom in Bengal and Bombay Mahomedan joint families are regulated by practically the same law as the Hindu joint families.

Q. That is not really the case in the more truly Mahomedan families. The Mahomedans you are speaking of are largely of Hindu origin. In the Punjab and United Provinces the Mahomedans have their family affairs regulated according to the Koran.—*A.* That is so; but Mahomedan joint family firms are very rare, so far as Bengal is concerned. I have never come across a Mahomedan joint family firm, in the strict sense of the term.

Sir F. H. Stewart.—*Q.* Do they have Trusts?—*A.* For business purposes *wakfs* are not recognised; but they have been recognised by the Privy Council for the maintenance of Mahomedan families. I don't know of any case of trust of a family business recognised in law.

Mr. C. E. Low.—*Q.* What Sir Francis Stewart means is—could they set aside part of the business as a *wakf*?—*A.* There has been a conflict of opinion in regard to that. There have been some recent cases in Calcutta and Bombay, in which the question was raised whether you could not make a *wakf* of shares. But the better opinion now is that you can. These were shares in joint stock companies. There is no such thing as a share in a partnership which is transferable. It is not transferable unless with the consent of all the partners.

Q. But a very large number of Mahomedan firms, especially those engaged in the leather trade, consist of several brothers or cousins?—*A.* Such partnerships are all contractual; they are not joint family businesses.

Q. But they will all need registration?—*A.* Yes; that is the reason why I say, if you allow 20 or 30 years to pass by, that will make people get used to registration, and it will not operate harshly at the end of that period.

Q. This case has been under discussion, I think, since the sixties or before, and it has been to the High Court several times for decision. Apparently they did not consult the bar or the public, though the various chambers, both European and Indian have been consulted on several occasions. This question of small partnerships has always been considered one of the stumbling blocks in the way. That is why I have been pressing the question. There is another difficulty which exists in Bombay to a great extent. In Bombay it is very usual to have what they call single ventures, or transitory partnerships, which have reference to a particular period, or a particular transaction: that is to say, certain persons who each have special facilities towards the completion of one portion of the business will enter into a partnership, say, for the chartering of a ship, or for the collecting or financing or exporting of a particular consignment: or they may join together, say, for bringing cotton from up-country into Bombay for the season. This business is perfectly legitimate and is conducted on honest lines. These cases are extremely numerous, and you get such transitory partnerships overlapping with permanent partnerships. That means the bringing in of a very large registration of business, and if you leave them out, a coach and four could be driven through any form of law.—*A.* I would not leave them out. They are syndicates for single ventures, and are governed by all the rules which regulate partnerships.

Q. Don't you think the roping in of these very small partnerships and these transitory partnerships constitutes a serious stumbling block in the way of any registration of partnerships?—*A.* I do not think so, because registration means the paying of a small fee and going to a registration office. Whether it is a single venture or a more ambitious undertaking, after all it is not such a great hardship to go to a registration office and pay a rupee or two.

Sir F. H. Stewart.—*Q.* There again the difficulty may be met by fixing a limit as to the amount of capital or the period of time.—*A.* Say a partnership is for a fixed term and the partners continue the business beyond that term. That is perfectly legitimate in law and they are regulated by the same agreement which was originally entered into. Say a partnership is entered into for 5 years, and the partners find it profitable and continue the business for a further period of 5 years. After the first 5 years they are regulated by the same agreement into which they had originally entered.

Mr. C. E. Low.—*Q.* Have you considered the amendment to the Civil Procedure Code, particularly order No. 30, which followed the English order? How has that affected the position.—*A.* It is really this. Previous to the change in our law, partners bringing a suit against a firm had to sue in the names of individual partners; and if the partners themselves had to be sued, they had to be sued in their individual names. The change is they can now sue or be sued in the firm's name. As Lord Lindley has pointed out when a firm's name is used, it is only a convenient method for denoting those persons who compose the firm at the time when that name is used, and a plaintiff who sues partners in the name of their firm in truth sues them individually, just as much as if he had set out all their names. The partnership name is a compendious mode of dealing with it for the purposes of a suit; but when the suit is brought in the name of the partnership, the defendants can always call on the plaintiff to disclose the names of the partners. The same difficulty which is experienced in other cases is experienced there because if the partners are dishonestly inclined, they will disclose the names of impecunious people and keep back those of people who have money; and it has no effect on the evil which has to be remedied.

Q. Supposing they registered only the men of straw ; then any party dealing with them has this preventive that he can look at the partnership deed and need not deal with them ?—*A.* That is my point ; he need not give them credit.

Q. This registered description could not be impugned either by the firm registering, or by anybody else ?—*A.* A member of the firm may impugn it, if he finds that a man is left out or that a man is entered as a partner who is not a partner.

Q. Supposing a firm consists of A, B and C and was registered. D goes on giving them credit as members of the firm and then files a suit against them, and C also files a suit to get the registration altered, and he wants A, who is a rich man, left out. Would that be possible ?—*A.* If the two suits are instituted very shortly after the registration of partnership, such a contingency is possible.

Q. But if it is done three or four years afterwards ?—*A.* The Registration Act ought to provide that if you want to rectify a registration it must be done in a certain time. The register can always be rectified. In the case of the Patent Law for instance it is possible to have simultaneous suits filed against a registered patentee and to rectify the register ; but such a contingency is not likely to occur frequently.

Q. You say that it is open to the public to register their partnerships as things are ; but that custom has prevented this being done and there is no particular reason why it should not have been done hitherto ?—*A.* There may be other reasons, *e.g*, the unwillingness of partners to let their internal affairs be known.

Q. But the case of the banks you were citing just now makes it very curious that banks or other financing agencies should never have insisted on their customers registering their partnerships.—*A.* They have suffered in consequence.

Q. It is very curious they have not done so.—*A.* Because the banks deal with people who ordinarily carry on business in an honest way: I have known of several cases. I was appearing for a well-known bank and we could not prove partnership. If the bank had insisted, before advancing money, on the partnership being registered, all the cost and time involved in the suit would have been avoided.

Q. Did you ask them why they did not do it, in the first instance ?—*A.* No, I don't think I did. Even if I did they would have simply said they did not do it. That would not have improved matters. It is always the confidence trick. Dealers go on for years and years doing business in a perfectly honest manner ; pay up their dues in proper time, and the bank has no suspicion. Suddenly, perhaps for reasons over which they have no control, the dealers find themselves unable to pay, and then they resort to all sorts of shifts and devices.

Mr. A. Chatterton.— *Q.* When two men enter into a partnership, each of whom belongs to a separate joint family, do they pledge their own joint families in any way ?—*A.* Each pledges the credit of his joint family, if he enters into the partnership as *Karta.*

Q. And in cases in which they are not the *Kartas* ?—*A.* One who is not the *Karta* has no right to pledge the family credit. He pledges his own credit, *i.e.*, the credit he enjoys independently of the joint family.

Q. Can the *Karta* pledge his own credit separately to his creditors as a member of the joint family ?—*A.* Yes. A *Karta's* liability fastens on the joint family's property, if that liability has been incurred for purposes of the family.

Q. Can he separately pledge his property ?—*A.* Yes.

Q. In making an agreement can he differentiate between the two properties ?—*A.* Yes.

Q. Does this law about *Kartas* and their power of representing joint families apply to the whole of India : does it apply to the south of India ?—*A.* Yes. If I may explain, Hindus are classified under two schools of law. One is called the *Dayabhaga* School which applies only to Bengal, and the other the *Mitakshara* which applies to the rest of India ; and the law of *Karta* is common to both schools, and much about the same.

Q. In the south of India we have been advancing money on the security of landed property ; and it has always been our custom, under the advice of the Government solicitors, to make every party in the joint family sign. Is that necessary ?—*A.* It is not strictly necessary, if you get the *Karta* as *Karta*, but it is certainly safer.

Q. What protection would you get by registration ?—*A.* The others may say there was a separation and the *Karta* no longer represented the joint family ; or a member of the joint family may say, "I have separated, and the *Karta* had no right to represent me." It is the interest of the stranger partner to see that the man who represents himself as *Karta* is the *Karta.*

Mr. C. E. Low.— *Q.* Supposing the defence is raised that the person who registered as *Karta* had no right to register ?—*A.* If a man does something which he has no right to do, then the usual consequences will follow.

Hon'ble Sir R. N. Mookerjee.—*Q.* But he is individually liable as one of the partners ?—*A.* Yes.

Mr. A. Chatterton.—*Q.* And is it common, when suits are brought, to declare who is the *Karta* of the family ?—*A.* Such a suit is unknown.

Q. Supposing there was any dispute as to who was *Karta* ?—*A.* No, there is hardly ever any such dispute. There can be but one *Karta.*

Hon'ble Sir R. N. Mookerjee.—*Q.* What made you write this article in *Weekly Notes*? What led up to it?—*A.* I was recently engaged in several suits each lasting 5 or 6 days, and in the end nothing came of them. The plaintiff could not prove his case. This was not only a recent experience of mine, but has occurred ever since I joined the bar. Recently there was a crop of cases like that, which made me write the letter in question.

Sir F. H. Stewart.—*Q.* You say that a death in the partnership voids any partnership agreement?—*A.* Yes, it dissolves the partnership unless there is a contract to the contrary.

Q. Does that apply to Hindu joint families?—*A.* No. I have explained in my note that, so far as a Hindu joint family is concerned, the joint family is not affected by death or birth; it only affects the shares. For instance, there are 5 male members in a family. Each is entitled to a one-fifth share. If there is a death in the family, then the share increases to one-quarter. If there is a birth, the share is reduced to one-sixth. But the family goes on, irrespective of births and deaths, and is represented by the *Karta*. The *Karta* might change. Supposing the joint family consists of 5 sons and a father, the father is *Karta* and when the father dies, the eldest son becomes *Karta*.

Q. That would not void any responsibilities which the joint family entered into?—*A.* Oh, no; because once you accept the principle that the liability of the *Karta* is the liability of the joint family, then if the father, as *Karta* incurred liability, that is the liability of the family. It does not matter if the father dies, and the eldest son becomes *Karta* the liability is there. When the father is *Karta*, his debts are payable by the sons, if the same are not incurred for illegal or immoral purposes. The joint family property becomes liable.

WITNESS NO. 471.

MR. G. S. HART, C.I.E., *Inspector-General of Forests, Simla.*

(*This witness's written and oral evidence is confidential.*)

WITNESS NO. 472. *Mr. J. W. Meares.*

MR. J. W. MEARES, M.I.C.E., M.I.E.E., *Electrical Adviser to the Government of India.*

WRITTEN EVIDENCE.

I will deal first with the condition of the electrical industry in India, making suggestions in the course of my note (paragraph 5) with regard to the question of "Financial aid, guaranteed Government purchase of products for limited period." In the course of my experience as Electrical Adviser to the Government of India, I have frequently had occasion to remark on the shyness of capital in relation to electrical enterprise. Until a few years ago the companies, who obtained licenses for supplying electrical energy to the public, obtained their capital entirely from England. Several fairly promising schemes, after being investigated by specialists at considerable expense, failed to mature. This may have been due to lack of financial support, but it was more probably due to the capitalists being unable to get any assurance that they would get a return on their investment. Quite recently however companies of this nature have been floated successfully with indigenous capital, and have justified their expectations, but on the whole the progress of electric supply has been very slow in India.

2. I do not think that this slow progress has been due to the legislation governing the subject; at any rate this has not been an important factor. The law was revised in 1910 and is now very favourable to licensees as compared with British law; and the subsidiary rules are revised every few years, generally in the direction of less stringency, as the result of practical experience. In such a matter as wayleaves for overhead lines, which are the greatest stumbling block in England at present, India has led the way.

3. Apart from the small municipal water-power installation at Darjeeling, the first public supply scheme was that in Calcutta. This began on a very small scale, but has grown enormously and has proved a great success. So also have the undertakings in Bombay and some other places. Where success has been slow in coming, or has not been achieved at all, I think it has been largely due to the undertakings being tied down to particular manufacturing contractors. It is obvious to the technical man that the conditions in small towns are totally different to those in Calcutta and Bombay, but the English capitalist was probably not so well informed. Having been once bitten he remains shy. There is no doubt at all that electric supply can be made to pay in many other towns with good management, provided that the consumers do not expect to pay low rates for a few years and the shareholders or ratepayers, if the scheme is municipal, are prepared for the almost inevitable loss in early years of working. Given that concerns are being run by people who have no axe to grind, and to whom the shareholders' interests are the prime consideration, capital will probably be forthcoming. Municipalities, except in hill stations where there is water power, have been very unenterprising.

4. In electrical concerns the majority of the higher supervising posts must, I think, inevitably be held by European trained engineers. Experience in manufacturing works is a *sine qud non*, and no such electrical works exist in India. It is probably true, however, that this does not greatly affect the total working costs. Analysis of published figures shows that, while supervision and management cost decidedly more, labour costs much less in India than in the United Kingdom.* Lack of progress is not then due to this cause. The lower grades of supervision are already staffed by men trained in India, including Indians.

5. In most cities that are likely to be able to support an electric supply company there are a certain number of buildings in the occupation of Government. The probable consumption for fans and lighting, and perhaps printing or pumping machinery, can be gauged approximately beforehand; and sooner or later these buildings will inevitably require a supply. Where Government takes the lead the public are certain to follow; but the result of a preliminary canvas of inhabitants is almost invariably disappointing. Government, however, cannot be expected to pay out cash until it is able to use the electricity it buys; what it can do is to guarantee an annual sum equal to the value of its estimated consumption, to come into force as soon as the installations in question can be fitted up and (say) within a year of the commencement of supply In several towns guarantees of this nature (though differing in detail) have been given with good effect. Such guarantees during the early years, when some loss to the concern is almost inevitable, would be a great incentive to licensees as well as a direct benefit to the towns in question. The Electric Supply and Traction Federation of India, representing all licencees under the Indian Electricity Act, have strongly urged on the Conference of Government Electrical Engineers the desirability of a Government guarantee on a sliding scale, such that the excess profits over (say) 10½ per cent. are returned to the guarantor.

6. Much misunderstanding arises from reference to electric *lighting* as though it were one with electric *supply*; an anachronism due mainly to the unfortunate British "Electric Lighting Act" of 1882. Domestic lighting is now perhaps the least important of all the various applications of electricity. In the Indian towns which have at present no supply the mainstays of an undertaking must be electric fans and street lighting. From the point of view of the supplier these are the applications which pay, owing to their long hours and high load factor. From the point of view of the towns they spell health and improved public order. The public lighting of most Indian towns is at present deplorable, and good illumination would perhaps almost pay for itself indirectly in decreased crime.

7. As regards light, technical advances in the last few years have given about three times the amount of light for a given expenditure of power. More than ever now, domestic lighting is by far the least profitable item in the output of a power station, owing to the fact that its maximum demand occurs at the same hour for every consumer and lasts but a short time. Of course in industrial districts power supply to factories and the like is far more important than any domestic application, but these places mostly have a supply in being already. For new industries, especially electro-chemical, both fuel and water power are available.

8. Consumers in India expect to get their power as cheaply as consumers in large cities in England. In course of time they will probably be in this happy situation; in some places, for special purposes, it is already an accomplished fact. The grounds for and against a cheap supply in India may be tabulated as follows:—

(i) *In favour of cheap supply.*—A large fan load during daylight hours as well as all night, giving an exceptionally high load factor; the extensive use of overhead lines for distribution, which (especially in the early stages of an undertaking) enables the supply to keep pace with extensions, owing to its lower cost and great flexibility. Lower cost of labour is also of some importance.

(ii). *Against cheap supply.*—In Indian cities a large proportion of the inhabitants will always be too poor to afford electricity in any form; consequently the premises actually requiring a supply are more scattered than in home cities. Even apart from this factor, the houses in the European quarters are generally further apart. The heavy cost of freight and carriage of plant; the necessity, already emphasized, of European supervision and management; the difficulty of obtaining cheap capital and of avoiding unreasonable promotion expenses, or undue profits to contractors for plant by no means always suitable.

9. It must not be forgotten that consumers in European towns, in the days when lamps were inefficient and motors unreliable, paid rates which would now be considered ludicrous and thus (despite adverse legislation in some countries) assisted to build up a huge industry. A similar willingness to pay fairly high rates at first would materially assist here.

10. Although perhaps without effect on the progress of electric supply, the question of the jerry wireman and contractor—corresponding to the jerry builder—is an acute one in India, and merits attention. Wherever public electric supply exists there must be firms to carry out the installation work in buildings, and in this respect the private standard of work in India is at present lamentable. Proposals were made at the first Conference of Electric Inspectors, held in Calcutta in 1915, for the licensing of wiring contractors and wiremen; these proposals were again discussed at the second Conference in December 1916, and it is hoped that a method may be evolved of dealing with the matter. The Indian workman, and especially the

* See tables in the "List of Electrical undertakings in India" published by the Superintendent, Government Printing, India, 1918.

Sikh, has been extraordinarily clever in learning the technicalities and practical difficulties of wiring work. There appear to be enough of these men to ensure that good work shall be done and a great deal of high class work is done, where the supervision is competent and honest. On the other hand, trading on the general ignorance of electricity, there have sprung up a large number of firms who will carry out such work at cut prices, with the worst material, incompetent labour and no supervision. This state of affairs is of course dangerous, but the examination of every installation by the supply company, the insurance companies or the Government is an impossibility. So long as the lowest tender is accepted the worst work will generally result, except where it is carried out to specification. Engineers in charge of prime-movers are required to be qualified, as already pointed out to the Commission; the Hon'ble Mr. James Currie would apply similar tests to mechanical engineers; and I would extend the list to include electrical engineers and contractors, and if possible electrical mechanics and wiremen. To ensure the proposition becoming practicable, better facilities for proper training are desirable; and, as limited liability companies are likely to deal with the matter only to the extent of their own limited needs, I think the municipalities should take it up. The training would almost certainly have to be free, the cost being set off against the heavy material loss now occurring through bad work. The class of men in question would not voluntarily pay to be trained. At present they pick up their knowledge in the way peculiar to India, by attaching themselves to others a little more advanced.

11. *Purchase of stores.*—I now turn to another matter, namely the local purchase of electrical stores for Government work. In this matter the rules have from time to time been altered, but it remains true that most stores have to be purchased through the India Office. In my opinion it would be far better if there were unrestricted facilities for purchasing locally. I am not aware that the officers who now have the duty of purchasing in England have any experience of Indian conditions; the results sometimes point in the opposite direction. For instance, cases have occurred where admirable but very complicated types of oil engine have been supplied, which the average Indian mechanic is quite incompetent to understand or work efficiently. Apart however from specific instances, if a contract is entered into with a local firm for supply and setting to work of plant, the payments will not be completed until the plant has satisfactorily passed its tests on site. No tests in manufacturers' works, even if the Inspector never leaves the room while they are taking place, can ensure that after 7,000 miles of transit by sea and land the same results will be obtained in a different climate and at a different altitude. The usual British methods of packing alone have precluded much hope of this in the past. Most of the large electrical manufacturing firms have branches or agencies in India, with engineers familiar with the climate, the modes of land carriage, and the ways of the Indian mechanic and his attendant coolie. Inevitably these branches carry out most of the private work, and are therefore in a far better position to judge what is necessary and what is useless than their principals in Great Britain. If the latter receive an enquiry through the India Office they will have to conform to the requirements laid down; enquiry as to whether this is suitable, from their Indian branch, would mean useless delay and presumably a loss of some part of the profits. In the case of bulky material, where shipping freights are perhaps the ruling factor, supply through the India Office is probably the better course; electrical goods however do not come in this category; not even plant, still less accessories. Agencies are of course much less satisfactory than actual branches.

12. *Co-ordination of Engineering Institutions.*—I understand that endeavours are now being made in England to draw the various engineering societies together, so as to co-ordinate their work; and that similar suggestions are being made to the Commission as regards civil, mechanical, electrical and mining engineers in India. At present engineers have no such legal status as doctors and lawyers; anyone can call himself a consulting engineer without let or hindrance, and it is not uncommon to see the misleading letters C. E. put after a man's name, as though they had some real significance. In India it is even more important than in Europe that engineers should have a definite legal status, with power to proceed against unauthorized, incompetent or corrupt practitioners. This applies not only to the electrical profession, though the proportion of untrained men is perhaps greater in this than other branches. With support from Government it should be possible to form a strong association of engineers of all sorts in India, as suggested to the Commission by Mr. Coubrough, such body to have legal powers of inclusion and exclusion, and to work in conjunction with branches of the existing Institutions of the Civil, Mechanical, Electrical and Mining Engineers.

13. *Advisory Boards.*—The association suggested would, amongst other functions, be able to provide an Advisory Board for the settlement of technical questions. The necessity for such an advisory body has, I believe, already been put before the Commission, and will be further urged in relation to electricity. At the third Conference of Electrical Engineers to Government, held in January 1918, the Electric Supply and Traction Federation of India sent a deputation to discuss questions of common interest. This deputation suggested that industrial progress was hampered by "onerous, unsuitable and restrictive legislation" but in the course of discussion it became clear that the real gravamen of the charge was not against the law and the rules but against their administration. Now the Indian Electricity Act is administered almost entirely by local Administrations, and will certainly continue so to be. In practice this means that the Government Electrical Engineer or Inspector has the settlement of questions spelling success or failure to industrial enterprises. It is true that an appeal lies from decisions of this officer to the local Government, but the Electric Supply

and Traction Federation urges, and I think rightly, that this means that the technical officer generally has his own way. Possibly a nebulous right of appeal to the Government of India and the Secretary of State may exist, but it is worthless in practice and will probably cease to exist when the foreshadowed political changes come to pass. If the technical officers were invariably of the right stamp it is fairly evident that complaints as to administration would be few and far between; but I cannot admit that this is the case. In the past it has been even less so, and many instances have arisen within my official experience where cases involving big interests have been badly mishandled.

14. The remedy suggested to the Electrical Conference by the Federation was an appeal to an Advisory Board, and I am very strongly of opinion that such a Board is urgently required in electrical matters. The Indian Electricity Act, in section 35, provides for the constitution of such Advisory Boards either by the Governor General in Council or the local Government, but hitherto no such Board has been formed, although the question has been mooted more than once. In discussing this proposal at the Electrical Conference it was not unnatural that some officials strongly objected to an Imperial Advisory Board, to which their decisions could come on appeal; they maintained that a local Advisory Board would be effective. The Federation did not agree with this view, nor do I. Cases have occurred where (in my opinion) a wrong line has been taken up by the technical officer and upheld by the local Government; and a local Advisory Board would probably also support its technical member.

15. Admitting that a direct appeal to the Government of India is no longer practical politics, a properly constituted Advisory Board for the whole of India offers a solution of the problem. It may be necessary (though I deprecate it) to give the final decision to the local Government concerned; but it would seldom care to act contrary to the advice tendered, if the report of the Advisory Board were made public. As regards the constitution of such a Board the Federation suggested the Director of Industries as one member. This proposal is sound so long as the Director has a knowledge of industries, but it is notorious that this is not always the case. Presumably in future such appointments will be filled by men with the necessary training, knowledge and experience. In addition the Board should have a Chairman with administrative experience and an electrical expert. As regards the latter, the Federation asked for the Electrical Adviser to the Government of India; but the Public Works Reorganization Committee (Report, para. 64, lines 8, 24, 56) state that there appears no necessity for this appointment. As commercial opinion does not appear to have been consulted this is not unnatural; and I know well that practically the whole commercial community think exactly the opposite. However, it is essential that an electrical expert, independent of the local Government, should be on the Board, whether he be a non-Government expert or an Electric Inspector from another province. In any case, he should be a man who at some period of his career has had actual commercial experience; men who have never earned their living by assisting to make profits or dividends cannot be expected to take a rational view of company management.

Oral Evidence, 21st March 1918.

Hon'ble Sir R. N. Mookerjee.—*Q.* You say in paragraph 3 of your written statement, "Where success has been slow in coming, or has not been achieved at all, I think it has been largely due to the undertakings being tied down to particular contractors." How tied down?—*A.* Quite a large proportion of the electrical undertakings in India were started by particular manufacturing contractors. I would rather not mention names, but these, seeing that there was a chance of making money in these places, got licenses and got the contracts for supplying machinery and plant without any competition; they were able to sell their own plant at their own prices, which were very much in excess of the market rates, and so the undertaking remained tied down to those particular contractors for years and years after they were started.

Mr. C. E. Low.—*Q.* Although in some cases there was a breach of the conditions and the contracts were cancelled?—*A.* They were cancelled in the end, but for years all the profits went to the contractors and the company was left high and dry. Some of those companies, such as the one in Cawnpore, took a long time to pull through; similarly Allahabad and Lucknow, and also Calcutta and Nagpur. I know in some particular cases that the profits which the contractors made were very great, while those made by the companies were entirely negligible for years. That has discouraged capitalists from putting money into electrical undertakings since. Calcutta, of course, was bound to pay from the very start, as they had conditions more favourable to them than any company has ever had since. They can be bought up as a "going concern," whereas many others can only be bought for their "then value" which is practically scrap value.

Hon'ble Sir R. N. Mookerjee.—*Q.* Your complaint is that the firms who obtain licenses give them out to certain contractors at higher rates?—*A.* It is really the manufacturers themselves who get the licenses and proceed to instal plant and do the whole thing themselves, as engineers, contractors, managers, they being the company practically.

Mr. C. E. Low.—*Q.* Would it not be correct to say that contracting firms take the initiative in these cases?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.* And if they did not do it?—*A.* They take the initiative certainly, and put up plant; but they put up what it pays them best to do, as contractors, rather than what would pay the company best in the future.

Q. But the public subscribe to such undertakings?—*A.* Yes.

Mr. C. E. Low.—*Q.* Was it not the rule that the capital was subscribed through the initiative of local people?—*A.* Not always; in one or two cases it was so; but in the other cases the capital was got in London.

Q. Those were the earlier cases; but in the later ones was not the capital got together by the initiative of local people?—*A.* Yes.

Hon'ble Sir R. N. Mookerjee.—*Q.* In paragraph 4 you say, "In electrical concerns the majority of the higher supervising posts must, I think, inevitably be held by European trained engineers." Don't you think that Indian engineers could hold these positions as well?—*A.* In time they might; but at the present moment there are so few Indian engineers who have had a chance of works training. It largely turns on that question of works training. A man must have been through large engineering works in order to be enabled to undertake such responsibility. With the exception of a few trade and railway works, the great majority of engineers in India at present are not able to get that training. They have got college training which does not fit a man for the commercial side of an electrical undertaking. A man must not only be an engineer, but have been through a drawing office, an estimating department, and all the commercial side of a large works unless he happens to be altogether an exceptional man.

Q. What about those Indians who have been to America and had European training? There are a few such now in India.—*A.* There are men like that. Sir Dorabji employs many Indians, and I know a good many myself who are exceedingly promising.

Q. In paragraph 5 you say, "Government however, cannot be expected to pay out cash until it is able to use the electricity it buys." What do you mean by that?—*A.* Companies sometimes want to get a guarantee from the very start, in advance of the Government consumption. It takes some time before Government finds the money for wiring its buildings, putting up motor pumps and fans, while the company says, "Unless we can get the money to start, your guarantee is of no use to us." They want Government to begin paying from the very start.

Q. That is a sort of loan or advance payment?—*A.* It would practically be that. They want the Government to guarantee to buy (say) fifty thousand units per annum, at a certain rate, and they want Government to pay for those fifty thousand units at once, while, perhaps, Government is only using five thousand units at the time. The company want the Government to pay for the entire fifty thousand units from the first year of the undertaking.

Q. In your opinion do you think it fair that Government should pay reduced rates?—*A.* No. In regard to that matter I am originally responsible for the arrangement. I made the arrangement between the Calcutta Electric Supply Corporation and the Government of Bengal a long time ago. At the time when the arrangement was made, it suited both parties: it paid Government and paid the company, and it was an entirely mutual arrangement. I said to Government, "This business is here to stay; you will have to wire your buildings in the coming years: why not go straight away and do them now." They told me to estimate the rates for the whole thing and I went to the company and said, "If I can get Government to wire their buildings, will you give them a rebate on the aggregate consumption in all Government buildings?" They said they would, and so we made those terms. I know that at the present time most of the companies in India think that the terms are not to their interest, and that the private consumer has had to pay more in consequence. I think myself now that that is true, that the public has to pay more if Government pays special rates, and that some other arrangement should be entered into.

Mr. C. E. Low.—*Q.* Is it not also the case, to some extent, that Government have a certain amount to do with the terms which are ultimately arrived at by the licensee. Government are receiving certain consideration and are supposed to uphold the interests of the public, not only with regard to the rates but with regard to other arrangements and facilities. Is it not possible that Government might concede certain things to the public, having received other things, such as consideration by way of lesser rates for their own supply? Might they not be influenced by that?—*A.* No doubt if Government is taking, say, 10 per cent. of the whole output at special rates, the public have to pay more. From the Government point of view, they would naturally want to make the best bargain. That was the view when this arrangement was made. The companies, and I think the public, are inclined to say that Government has got the whip-hand by being in a position to tell them to take it or leave it, and that they will put their own plant down if the company does not give them the rates.

Q. Are Government the biggest consumers?—*A.* Not the biggest, but very near it.

Q. Do they have a specially favourable load factor?—*A.* No, a very bad one.

Q. Is anything of the same kind done in England?—*A.* No, nothing of the sort.

Q. Do you know if it is done anywhere else?—*A.* No, I am not aware of it.

Hon'ble Sir R. N. Mookerjee.—*Q.* The general opinion is that Government should encourage all these industries?—*A.* So it should.

Q. But in practice Government instead of encouraging takes advantage of the situation and obtains reduced rates?—*A.* Yes.

Q. Do you approve of that policy as head of the Electrical Department?—*A.* I approve of Government encouraging undertakings by every possible means, and not discouraging them. I have been trying to encourage the electrical industry for the past twenty years, but have had great difficulty, because the decision in such matters rests in the hands of the provincial Governments and not in mine. I should like to say on this point that I have seen the memorandum* put up by Mr. Griffin on behalf of the Electric Supply and Traction Federation and except for a few details, agree with everything in it. Generally speaking, I agree with the whole of that memorandum.

Sir F. H. Stewart.—*Q.* In paragraph 10 you say, "To ensure the proposition becoming practicable, better facilities for proper training are desirable; and, as limited liability companies are likely to deal with the matter only to the extent of their own limited needs, I think the municipalities should take it up." I don't quite understand what you want the municipalities to do: is it to insist that the work is carried out properly or to provide training?—*A.* It is a difficulty that we have been discussing for years. Take the case of Calcutta or Bombay or any of the big cities. In half the houses of the more ignorant class of people, who know nothing whatever about electricity but who want their houses wired and can afford to pay for it, the installation is defective. They ask their friends, "Whom shall I get to wire my house?" and they find some little man who calls himself an electrical contractor, and, in four cases out of five, is neither competent himself nor are his workmen, and the work is done with bad material and bad supervision. This is a great source of danger to houses by fire, and is getting worse yearly. It was laid down many years ago that, when properly installed, electricity was the safest illuminant; but that, when badly installed, it was very dangerous. In order to prevent incompetent people from setting up as electrical contractors, I suggested that the Government of India should address all local Governments, saying that it was a matter for each local Government to take up itself, and suggesting that action should be taken towards this end. Some of the local Inspectors have been instructed to see what can be done, and some have started the licensing of wiring contractors and wiremen; so that, unless a man has got a license from the municipality or local authorities, which can be endorsed like a motor license, he cannot practise as an electrical contractor.

Mr. C. E. Low.—*Q.* Can an Electric Inspector inspect a domestic installation?—*A.* He has power "to enter any place, carriage or vessel" in which electricity is installed or used; but he does not go to inspect a private installation unless requested. He is supposed to go into factories.

Sir F. H. Stewart.—*Q.* With regard to your suggestion of an Advisory Board, what are your views as to its composition?—*A.* I have changed my point of view a little bit since last week. We discussed the matter, when it came up in several connections, at our recent conference. It was brought up by the Electric Supply and Traction Federation, who asked for an Advisory Board consisting of myself and the Director of Industries as another member. I thought this out, and, after our conference, sent up a suggestion to the Government of India that it would be better to constitute an Advisory Board consisting of five members; a Chairman, who would not be a specialist at all, and who would be appointed by the local Government; the Director of Industries; the Electrical Adviser to the Government of India. Then I suggested that the local Electric Inspector should be appointed, and, *per contra*, a man appointed by the local Chamber of Commerce. Those two would set off one against the other. That arrangement would be free from some of the objections to an Imperial Advisory Board, which some of the local Governments hold. Some of the local Governments have a great objection to any Imperial officer having a say as to what is done in their provinces. A Board like that would have only one Imperial officer out of the five members. I find however that the Federation are very strongly against having the local Inspector on the Advisory Board, looking into his own decisions.

Q. I do not quite understand how many of these Boards you want? One central one or one for each province?—*A.* If you had a Board of five, you would have four members from each province, and I should be a member common to all. If you had a Board of three members, it would consist of myself, the Director of Industries and the Chairman who would be a local man.

Q. What is the summary of your ideas?—*A.* That there should be a Central Advisory Board of three, and a local Board in each province of perhaps five, the one Board consisting of the same *officers* (*i.e.*, men holding certain appointments), but whether they would be the same *men* would be a matter of convenience. It would probably not be better to have one Director of Industries to go all over India, but to have the local Director of Industries for each province. My alternative proposal is for a Board of five, but there would be strong opposition to that, with the Electric Inspector on it; so that I am quite willing to say that the Central Board of three will do equally well.

Q. That is only to be advisory?—*A.* Yes, necessarily as the law stands.

Q. Who would have the executive authority?—*A.* The local Government, because we are entirely decentralized. I am only a Government of India official, and have no powers not even those of a head of a department under other Government departments.

Q. You say that the chief complaint was not against the law and the rules but against their administration. Would the Advisory Board have influence over the administration?—

* *Vide* Appendix A printed after oral evidence.

A. I cannot say. It would, if it was a body of weight. I presume the Chairman would be a senior Indian Civil Service man. You could by law give the Board more than advisory powers. Personally I should be in favour of that; but I am sure that every province will object to it.

Q. Do electrical problems vary very much in different parts of India?—*A.* Yes, considerably, and the treatment of them.

Q. Does that not strengthen the case for local control?—*A.* The principles are the same everywhere and are capable of a common-sense solution.

Q. Under which department of the Government of India do you work?—*A.* Under the Public Works Department, whereas my work has far more in common with Commerce and Industry.

Hon'ble Sir R. N. Mookerjee.—*Q.* What is the remedy for all these complaints?—*A.* At the present moment any consumer can appeal to the Electric Inspector, and an appeal lies from decisions of this officer to the local Government; but licensees are not at all satisfied with this and say that the appeal to the local Government is useless.

Mr. C. E. Low.—*Q.* What is the lowest salary paid by any local Government to an Electric Inspector?—*A.* I think Rs. 500.

Q. Do you know what the Bihar and Orissa Government pay now?—*A.* Yes, Rs. 700.

Q. Is there not a number of high-class installations in the Bihar and Orissa province, which are in charge of men on considerably higher pay than Rs. 500?—*A.* Yes, the big colliery installations are in charge of men of far greater experience, better training and more pay than the Electric Inspector.

(*Witness here gave confidential evidence.*)

Q. What is the legal position regarding appeals, under the Electricity Act, to the Government of India? Does the Indian Electricity Act make any provision for such appeals?—*A.* No; the Indian Electricity Act says there shall be an appeal from the decision of the Electric Inspector to the local Government or the Government of India, as the case may be, because either can appoint an Electric Inspector: but there is no appeal from a local Inspector's decision to the Government of India except in the sense that the latter have a general power of control under the Government of India Act.

Q. I am not quite clear about this Board: is the Board of three to be provincial or Imperial?—*A.* I don't care what you call it. The industry want me on it, and I think I should be on it. The Federation ask for a Director of Industries. He would be local, and the Chairman would in all probability be a local man. The best thing would be for it to be an Imperial Board, with the Director of Industries brought on as a third member, and the Chairman an Imperial officer. But that would mean a great deal more expense, and I don't think the Government of India will be able to do that. They would be able to appoint one Imperial man, but if they made the whole Imperial, it would cause a lot of opposition.

Q. You recognise that there is a very strong feeling held by local Governments against interference by the Imperial Government?—*A.* Yes, and I sympathize with it but new industries require different treatment from old established ones; and some local Governments are badly advised.

Q. What is the objection to your having the local Electric Inspector on the Board, according to your original idea of a Provincial Board of five members?—*A.* The original idea was a Board of five with the local Inspector on it, in order that he might put the case which was being appealed against before the Board; but I am inclined to drop that simply because the Federation tell me through their officers that they would not have confidence in a Board on which the Electric Inspector sat, because it will be about his decision in every case that the Board will have to decide.

Q. In the case of an executive decision of this kind, is there any particular objection to having the authority appealed against present, when you have the Electrical Adviser to the Government of India there; and you have other people representing the appellant and two unprejudiced outside authorities?—*A.* I pointed out to the Government of India that there would be four disinterested people against one officer concerned in the order appealed against.

Q. Would not the presence of the Electric Inspector on the Provincial Board be much more acceptable to the local Government?—*A.* Undoubtedly. The local Government don't want me; they will object to having me.

Q. It would be much more easy to have you, if they had also their own man?—*A.* It would.

Q. There are no works manufacturing electrical appliances as a commercial proposition in India at present?—*A.* Not on any large scale. There are the Calcutta Pottery Works which are making accessories. No factories are making electrical machinery: just repair work, but not manufacture.

Q. That makes it very difficult for an Indian to get shop-training in this country?—*A.* Yes, electrical shop-training. He can get mechanical, but not electrical.

Q. What is your view regarding the inception of surveys for hydro-electric sites by Government in this country?—*A.* It is rather an important matter and I have made a note on it. (The witness here read the following note.)

Hydro-Electric Survey.

(*i*) I am strongly in favour of a reconnaissance survey being made in the first instance. A detailed survey would take a long time, cost a lot of money, and be largely wasted for reasons I will explain. I believe that desultory enquiries have from time to time been made as to the available water power in India. Such investigations as have been made, however, have not, I think, been carried out by experts or on very well defined lines. The development of water power is quite a different proposition to irrigation or the like and the conditions are little understood. For large scale water power one of three conditions must be fulfilled —

(*a*) A large flow of water with a potential fall capable of utilisation, *i.e.*, a difference between the head and tail waters of least 4 or 5 feet and up to any head.

(*b*) A comparatively small flow of water with a high head, up to 3,000 feet or even more.

(*c*) A site capable of storing monsoon rainfall in sufficient quantity to last through the dry weather (with or without any normal inflow) at an altitude and in a position such that it can be discharged through a high head.

In case (*c*) the size of the reservoirs definitely determines the total amount of power stored. In cases (*a*) and (*b*) there is not only the power available from the normal flow, but the possibility (especially in *b*) of storing excess monsoon flow. Furthermore the normal flow continues all the 24 hours, whereas the power demand varies, so 1,000 H. P. may be made to give 3,000 during the hours of heavy load, by suitable storage.

(*ii*) In all three cases the fall may be either a natural one or may be developed by carrying the water in flumes or canals, with a very small bed-slope, to a point where the necessary drop can be obtained. As the power available is proportional to the product of the quantity of water and the head it is immaterial which you have. In exceptional cases both are obtainable.

(*iii*) These conditions rule out most of the rivers in the plains of India where the natural bed slope is so small and the seasonal rise and fall of the water so comparatively great that economic development is impracticable.

(*iv*) Again, it is useless to have available power with no demand for it, as is the case of the Jhelum at Mohora. Before a reconnaissance survey is put in hand at all the industries which it is proposed to start should be known. Then the question of raw materials must be looked into. Unless either the raw materials are near a possible site for water power or are within transmission distance of it—say, roughly 200 miles for large scale operations—it becomes a question of whether expensive freight will counterbalance cheap power. Presumably the Commission have full data regarding this point. In this way the ground to be examined might *ab initio* be greatly circumscribed.

(*v*) Many irrigation canals with a large volume of water come under head (*a*) in that they have small artificial falls from 5 to 10 feet capable of utilization. But in most cases there is an annual closure which militates against commercial use. For sub-soil pumping and high level irrigation however the closure is not objectionable. There ought to be no difficulty in collecting information through the Irrigation Department of all useful canal falls. The data required are merely the maximum and minimum discharges; the maximum and minimum differences between head and tail level; places where two or more falls are near enough to be jointly utilised; and the maximum and minimum closure.

(*vi*) Some rivers also come under head (*a*) and the Cauvery and the Jhelum have been utilized for power with a moderate flow and a moderate head. It ought not to be very difficult to ascertain, from local engineers, all possible places where rivers of moderate (or large) flow have enough natural fall to make development possible. Wherever there are rapids, wherever a river turns in a loop with a moderate natural bed slope, there are possibilities. In the first instance the roughest calculation of the discharge and of the difference of levels would alone be rquired. Beyond that expert advice is needed.

(*vii*) Coming to head (*b*), the conditions to give high heads must necessarily be in the hills. The first stage here is to find out where hill streams with reasonable catchment area have a perennial flow at altitudes from 2,000 feet and upwards, with a drop of that amount (or more) within easy access. Steep ground is therefore essential. Much could be done in the first instance by the examination of contoured maps by engineers familiar with the district. This would eliminate the useless sites. The next stage would be a series of very rough dry weather gaugings, coupled with aneroid determinations of height at the gauging point and at the lowest point within a few miles where a power station could be placed. Differences of altitude of 1,000 feet upwards should be looked for with pre-monsoon discharges of 20 cubic feet per second and upwards. These minimum figures combined would give about 1,000 kilowatts of power continuously, and considerably more under actual conditions with storage. Anything below that is hardly worth looking for except for hill station supply.

(*viii*) Under head (*c*) come at present the various Tata Schemes in the Bombay Presidency. I think this enterprising firm have already examined most possible sites in the Western Ghats, but there may be other localities where similar development is possible. To find these, if they exist, the first thing is to mark off all districts with extra heavy rainfall at high altitudes. The Assam Hills may be cited as an example. Such places alone can be of any use. Next it is essential to know whether these places have geological formations suitable for impounding very large volumes of water by means of dams. Thirdly it is necessary that there shall be a drop of 1,000 feet or more (the more the better) within reasonable distance. Most of these particulars are probably obtainable either from the Meteorological or Geological Departments, coupled with information obtainable by local engineers. Heads up to 5,000 feet have been utilized.

(*ix*) Such a reconnaissance would be neither tedious nor expensive. As sites fulfilling the conditions of (*a*), (*b*) or (*c*) were found they could be reported—this is more likely to bear fruit than the usual method of collecting a vast mass of figures before submitting them. Each promising case could then be examined by an expert in water power, who could determine in a course of a few days whether it was worthy of detailed investigation. If it proved so he could give in detail the lines on which that particular case should be examined by the engineers on the spot. Most of the surveying and gauging could be done by good Indian subordinates, under direction; and with the necessary guidance the local engineers could determine if there was a suitable site for a power house and practicable ground for channels, storage, etc.

Q. Do you think that, in cases where it is proposed to utilize canal falls, on anything like a large scale, the decision as to the amount of use which may be permitted, *i.e.*, the conditions under which the use of the falls may be permitted, and the rate to be charged, should be settled entirely by the Irrigation Department?—*A.* Most emphatically no In the cases which have come to my knowledge, I certainly do not think so. I grant you

that the Irrigation Department must have a say as to whether the falls can be used or not. If the canal is constructed for irrigation work, you cannot stop such work by switching off the water for a different purpose. But if the falls are to be used for power, the Irrigation Department should have no say whatever in regard to the charge to be made for the water, because the charge should be absolutely nominal in every case. In fact, we should say to the applicants, "Come and utilize the water, and we will give you every possible facility."

Q. Do you consider a charge of Rs. 24,000 for about 700 H. P., with interruptions running between one and two months a year, is a fair charge?—*A.* If you strike off the last three ciphers it would be about right.

Q. But you would agree that the irrigation of crops, speaking quite generally, must come first?—*A.* Yes.

Q. What agency would you suggest to decide as to the conditions to be imposed in a case like that of the Jhelum at Rasul? Do you know the site?—*A.* I have not seen it.

Q. But you know the general situation of it. In the first place, the question has to be decided as to how far a continuous supply could be guaranteed, and for what quantity. Do you think the Irrigation Department should be the only department having a say in that matter?—*A.* No, I think they should have the chief say, but I think somebody above the Irrigation Department should decide whether they are right or wrong. They should give their technical reasons but there should be a higher authority to accept or not accept the advice of its technical men. I think it absurd that our specialist opinions should be treated as absolute at any time.

Q. You realise that, when the Irrigation Department have arranged their programme anything which upsets that programme introduces a lot of new and disturbing factors which may prove impossible to readjust. But admitting the difficulty of that, what agency would you propose for considering what should be allowed in the way of supply to a hydro-electric concern at a place like Rasul?—*A.* That is rather a large question. The present method is for the proposal to emanate from the local Government; it then wanders round the Irrigation Department, then goes to the Government Solicitor, and then to the Electrical officer, when the whole scheme is cut and dried, and when it is too late for him to make any reasonable suggestions at all. I would suggest discussion on the spot by competent experts not of one branch, but all of them to begin with.

Q. In regard to the charge to be levied, who should be the agency to determine that?—*A.* I don't think that any agency is necessary. I think the charge should be nominal entirely. It should not be such that it would cause the slightest difficulty to the company.

Q. You realise that you only transfer the difficulty from one head to another. You would have to decide which, out of the numerous applicants, should be given the concession?—*A.* That would be a matter for the Board of Industries, which, I presume, will some day come to pass in India. At the present moment we have not had many applicants. I know of no cases in which people were competing for concessions. Generally one group asks for a concession and after from 3 to 5 years haggling gives it up as a hopeless task.

Mr. A. Chatterton.—*Q.* Among the suggestions made by the Electric Supply and Traction Federation of India, for alterations in the existing system of administration, is one that the administration of the Electricity Act should be controlled by the Commerce and Industry Department and not by the Public Works Department. Are you in favour of that suggestion?—*A.* Entirely.

Q. For what reason?—*A.* Because the greater part of the questions that come up are commercial questions rather than technical ones. At the present moment we have got a certain number of technical rules, and the Electric Inspector has to see that those rules are complied with. Government has practically nothing to do with that. The Electric Inspector goes his own way in technical matters; but when it is a commercial matter, if I may venture to say so, the Public Works Department is the last department which should have anything to do with it, because they have no commercial knowledge.

Mr. C. E. Low.—*Q.* For the same reason that the Inspector of Explosives is under the Department of Commerce and Industry?—*A.* Exactly. I think it should unquestionably be either the Board of Industries or the Department of Commerce and Industry, but not the Public Works Department.

Mr. A. Chatterton.—*Q.* The Federation also say that the status of Government Electric Inspectors should be improved. I suppose we may take it that your opinion is that Electric Inspectors should be men of the same status as managers of these large electrical supply companies?—*A.* Yes, at least as good.

Q. Apart from commercial considerations, there is a considerable number of technical matters on which the Electric Inspector must give a decision, and his ruling on these matters is, under the Electricity Act, subject to appeal to the local Government. Questions have arisen regarding, for instance, the testing of meters. Has that been brought to your notice in any way?—*A.* Yes.

Q. Have these Electric Inspectors the proper equipment for testing meters?—*A.* Some have; not all.

Q. When a man has not got proper equipment, what happens?—*A.* He cannot test the meters.

Q. How does the Supply Company get on ?—*A.* There are some provinces where at present they have no testing to do whatsoever, and therefore no question has come up. If a question did come up, they would have to send the meters to Calcutta. Take the case of the United Provinces. The Electric Inspector there is asking for a laboratory. What he would do if he had a meter dispute I don't know: probably he would take it down to Calcutta.

Q. When a concession is granted by a Local Government, have the plans for the installation to be passed by the Electric Inspector ?—*Witness.*—Do you mean for a power house ?

Mr. A. Chatterton.—*Q.* For a power house or distribution lines.—*A.* Overhead lines require a general sanction, because if the lines don't comply with the rules, they are turned down afterwards; but in regard to the design of a power house, that is entirely uncontrolled by Government, except in small matters like earthing, etc.

Q. Have such questions come up ?—*A.* Mainly in connection with overhead lines, not with power houses.

Q. Do you consider the rules laid down in regard to lines satisfactory, and is there uniform practice throughout India ?—*A.* There are uniform rules throughout India. Twenty-five years ago we had the Board of Trade rules which said that poles must have a factor of safety of 12 with a wind pressure of 50 lbs. per square foot, which is absolutely impossible. Government revised the rules about 1898 and brought the factor of safety to 5, and the wind pressure to 25 lbs. per square inch. We went on with that for some time, and found that also impracticable. I then got it brought down to four, and it is now that, and applies to all India. At the present moment I have a suggestion with the Government of India for altering the wind pressure according to zones, in place of a fixed 25 lbs. for all-India, and I have had a map prepared by the Meteorological Department to show these Zones. I also suggested that the factor of safety should be brought down to 3, but the Public Works Department would not agree to that. I have gone back to that point again and suggested the factor of safety of 3 for steel poles. Three is in my opinion ample, but I have agreed to keep it at 4 for reinforced concrete and wood.

Sir D. J. Tata—*Q.* How about wooden poles ?—*A.* They should have a bigger factor of safety. I have seen quite a number that have rotted away in the earth and in some cases the section of the pole had been reduced to one-seventh of its original size. They should not be used here.

Mr. A. Chatterton.—*Q.* It is also suggested by the Federation that Electric Inspectors be given increased power to relax rules and more definite instructions to encourage electrical development.—*A.* They already have power to relax certain rules, and the local Government has power to relax nearly all other rules, which is exactly the same as if the Electric Inspector had the power. He will not, however, exercise that power. To my knowlege rules have been relaxed in only about 8 cases. The Government of India has the power of revision, but that power has never been exercised so far, as the relaxations have all been reasonable. Rules are really only necessary for people who will not do good work; bad work never pays a company which has to go on using it afterwards.

Q. I understand you have a list of electric installations in India. Has that been brought up to date ?—*A.* Yes, it is in the press at the present moment. I shall have it out in the course of a month or so.

Q. Can you let us have a proof copy ?—*A.* Yes, but it is very incomplete. It has got most of the statistical data, but is not up to date in regard to some of the working costs, as some provinces will not send in returns.

Q. I understand you are a Member of the Institution of Civil Engineers and a Member of the Institution of Electrical Engineers in London. The question is before us as to whether it would not greatly assist the development of engineering in India if we had some society in this country run on lines analogous to these institutions at home. I see from your note that you have given the matter some consideration, and I would like to know your views in more detail.—*A.* The question arose originally in connection with the mechanical engineers, who have a local branch in India. Mr. Coubrough told me what they were doing and gave me certain papers which (as Local Honorary Secretary for India) I have sent officially to the Institution of Electrical Engineers, suggesting that the Council should look into the matter with a view to forming a body out here, composed of the Engineering Societies at home. I think something of that sort, or an alternative, is under consideration; the alternative being that an Indian Institute of Engineers, which would be independent of the home institutions, should be formed. The difficulties which we have in this country at the present moment are very great, from the constant stream of applications that come from young men for admission as members of one of those societies. One can find out nothing about the man. He sends in papers showing he has a certain amount of experience, but somehow or other he has not got the signatures of local people. It is a very difficult question. If you could get a local Institute with sufficient driving force behind it, and a sufficient status, it would be a very fine business indeed.

Sir F. H. Stewart.—*Q.* Which would you prefer; that there should be branches, or a separate institution ?—*A.* Speaking personally, I would prefer it to be run from the institutions at home. I would not, however, be sure as a matter of policy whether the other would not be the best.

Hon'ble Sir Fazulbhoy Currimbhoy.—*Q.* You say in the tenth paragraph, "This state of affairs is of course dangerous, but the examination of every installation by the supply company, the insurance companies, or the Government is an impossibility." In Bombay, the supply companies do not give us current, except after the installation has been examined and passed by their man.—*A.* Doubtless the statement is rather sweeping, but in point of fact it is perfectly true. The company supplying energy under license has certain obligations not to take on a consumer unless his installation is in reasonably good condition. If a new consumer applies for power, the company sends a man round to connect the installation, and he takes a testing set and tests the insulation resistance. He may have a glance round the part of the installation nearest to him, but if there is no leakage, he connects the installation on. The company wants to get revenue. They say, "This installation is passable: it is pretty rotten, but is good enough for us." They connect the installation on at once and never go near it again unless there is a fire or other trouble. It is impossible to make periodical inspections of five or ten thousand installations.

Q. This is a very serious question. In a big mill, if I have an inferior installation, and the insurance company accept the certificate of the supply company it means a serious loss to the insurance company, should the installation catch on fire—*A.* The insurance people sent over a deputation to our Conference last month and we taxed their electrical inspector with it. We said to him, "Surely it is your business as electrical inspector to the insurance companies to examine the installation." He replied that, as a rule, until the whole installation was erected, they did not get the opportunity to overhaul it, so they took their chance.

Q. What is your suggestion—that the Government Inspectors should do it?—*A.* No, they cannot do it except for Government work. We want to educate the public not to accept the lowest tender, and to educate the men who do the work to do decent work. I think those are the only two directions in which the matter can be remedied.

Mr. A. Chatterton.—*Q.* Are accidents reported to you?—*A.* Yes, or rather to local Inspectors; but many are not reported. I don't think there are a great many at the present time, but there are going to be many more when the present bad wiring goes to pieces.

The witness here desired to refer to the question as to what extent the present Electricity Act is out of date in England. He said that the Electricity Acts there are and have been from the very start utterly hopeless. They were bad, lock, stock and barrel. The Board of Trade rules, which were framed under the Acts, were, without exception, the most restrictive in the world.

Mr. C. E. Low.—*Q.* Has the position you are now taking up been supported by anybody in position at home?—*A.* Most strongly by the whole business world. It has been trotted out before several committees. The question has been raised for 30 years without any effect, because the subject did not interest Parliament; but a very able man, who has been Electrical Adviser to the Board of Trade, was strong enough to say the same. There is a tendency on behalf of business men here to take up the same attitude as regards the Acts and rules in India, and I would like to say a word on that. When I came out to India there was only a local Calcutta Act. We started the first Imperial Act in 1903. We looked through the different Acts in England and abroad, and made a simpler Act, with most of the features, to which exception had been taken in England, knocked out. We took the Board of Trade rules, which were then in force in India, and struck out two-thirds of them, altered a large number, and made them fairly unobjectionable. Since then we have revised the rules five times altogether, in the direction of more latitude in every case, and striking out things to which the supply companies rightly objected. In amending the Act in 1910 we took a lot out and made many of the points better: for instance, purchase terms of undertakings. One of the objections at home is the very great cost of getting statutory powers, because you have to go through Parliament at a cost of thousands of pounds. Here a license costs Rs. 500. The second thing was that undertakings at home could originally be bought up after 21 years for scrap value. They subsequently altered that to 42 years. Here an undertaking can now only be bought compulsorily after 50 years, and the price to be paid is not scrap value but scrap value *plus* percentage up to 20 per cent. The licensees will get a really good price for their undertaking so long as the undertaking is in good condition and is successful. The third difficulty at home, and one which has done more than anything else to keep electric supply down, was that they would not allow overhead lines for many years. In recent years the Board of Trade have allowed big power companies to erect overhead lines, but this concession is practically valueless, because they cannot get wayleaves. We have provided for wayleaves all along in our Act, and the provision works well. I have a proposal for amending that clause under consideration. I have no doubt that within a couple of years the Act and rules will be amended again. My proposals are with the Government of India. The objection which the Federation brought up in regard to the rules is not borne out in practice. Mr. Gibbs of the Tata Hydro-Electric Supply Co., has told me that the rules are on the whole excellent and have given no trouble at all to him. On broad lines they are very excellent indeed. Nor for the matter of that have the Calcutta Electric Supply Corporation had any trouble. The unsuccessful companies, who have never made a success of their business, and perhaps never will, have got to put the blame on something, and so they put it on the rules.

APPENDIX A.

MEMORANDUM FOR SUBMISSION TO THE INDUSTRIAL COMMISSION.

From the Committee of the Electric Supply and Traction Federation of India.

1. For several years there has been serious dissatisfaction among Supply Companies in India with regard to the Indian Electricity Act Laws and Rules under which they operate, and to the administration of these laws. As a result of this dissatisfaction the Electric Supply and Traction Federation was formed in 1916 to enable companies working under the Act to take combined action and lessen if possible those difficulties under which they now operate. The Federation maintains that these causes are stumbling blocks to electrical and industrial development, and their views are expressed more fully in the enclosed copy * of a speech made by the Chairman of the Federation at the Government Electrical Conference in January last, and which I am requested to commend to the attention of the Commission.†

The Federation feels that the Commission can do much towards obtaining for electrical licensees the sympathy which is so greatly needed for the encouragement of electrical development, and with this end in view it begs to offer the following suggestions for alterations in the existing system of administration :—

(*a*) That the administration of the Electricity Act Laws relating to electrical licensees and the granting of new licenses should be controlled by Commerce and Industry Departments and not by the Public Works Department.

(*b*) That the status of Government Electric Inspectors should be improved (*vide* paragraph 8).

(*c*) That Electric Inspectors be given increased power to relax rules and more definite instructions to encourage electrical development.

(*d*) That there should be an Imperial Technical Court of Appeal to which licensees should be able to appeal where an Inspector gives a decision which is considered unreasonable.

The following reasons are put forward in support of the Federation suggestions :—

2. *Administration of Electricity Act.*—It will be admitted that the training, the duties and the heavy responsibilities of the officers of the Buildings and Roads Department of the Public Works Department produce a strong tendency towards codifying, to framing and enforcing cast-iron rules and specifications, and to spending large sums of money in order to avoid personal risks of unsatisfactory work. The Federation submits that the attitude and view point of any British engineer accustomed to live under such a routine must inevitably be foreign to that required in the control of new industries needing flexibility in the application of rules, and sympathetic encouragement with a view to extending their spheres of operation to the greatest possible extent.

If electrical development, which is so closely linked to industrial development, is really desired by the Government of India, then it thinks that there can be no doubt whatever that the administration of the Electricity Act Laws, in so far as they relate to licensed undertakings should be placed under the Department of Commerce and Industry. It is perhaps not the function of the Federation to suggest to Government how this administrative change should be made, but in order to meet possible objections that the proposal is not practicable, it offers two suggestions—(*a*) that the electrical officers of Local Governments should report to Commerce and Industry Departments as far as their duties as Electric Inspectors of licensed undertakings are concerned, or, as an alternative, (*b*) that either the Electrical Adviser, or an engineer with good administrative as well as engineering experience in the electricity supply business, should be permanently attached for the purpose to the Commerce and Industry Department of the Government of India. This officer might need one, or eventually two Assistants, but for the hundreds of power stations in England, the number of Government Electric Inspectors is very much less than now exists in India for less than 25 electrical undertakings.

If undertakings are placed under Commerce and Industry, it anticipates much benefit both to the undertakings by relaxation, where circumstances warrant, of the red tape limits of the law, and not less benefit to the public by cheapening and extension of electric supply facilities. Its experience shows that at the present time the attitude and standpoint of Electric Inspectors is not infrequently that they are required to act as zealous policemen (and even as detectives) ever watching against the possible infringement by licensees of arbitrarily fixed limits. It submits that in place of this their attitude should be that they are Courts of Appeal wherever the licensee gives dissatisfaction to his consumers or prospective consumers, and that where relaxation of a rule within reasonable limits is likely to result in an extension of the supply, such relaxation should be favourably entertained provided that the licensee is prepared to accept responsibility for any civil risks involved. It believes that the attitude of Electric Inspectors would be on the lines suggested in the last sentence if our undertakings

* Not printed.

† The report on the Conference is on sale with the Superintendent, Government Printing, India.

were controlled by Commerce and Industry, and it does not consider that there is any force in the argument that it is essential for these engineer officers to be solely responsible to the Public Works Department. No one appreciates more fully than the engineer members of this Federation the immense debt which India owes to the able men who from time to time fill the positions of Chief Engineers to the various provinces, but, experienced and versatile as these officers invariably are, it considers that everything possible should be done to avoid any conflict of opinion on electricity supply matters between the Chief Engineer of a presidency or province and any Government electrical officer who has had sufficient experience in his own profession to entitle him to act as an Electric Inspector.

3. *Increased Authority of Inspectors.*—Assuming that officers of the right type and experience only are employed, it considers that they should be allowed much more discretion in the relaxation of Electricity Act Rules than is now permitted. Something more than mere permission is required, however, and this is the spirit of willingness to look at matters from a common sense point of view. The deputation of the Federation which met the Electric Inspectors in Conference recently found that various limits mentioned in the Rules are arbitrarily fixed upon by the Government engineers collectively, and its protests at such limits were met by the easy statement that in each province it would be within the discretion of the Inspector to relax the limits in special cases. Its universal experience is, however, that in actual practice the Inspectors are not prepared to consider the merits of any special case, but shield themselves behind the wording of the rule, and are unwilling to accept any responsibility of relaxation. It hopes and believes that under Commerce and Industry Departments all Electric Inspectors would realise, as a few of them do at present, that it is at least as much their duty to assist the extension of electricity supply as to restrict its use by the application of rigid limits.

4. *Imperial Technical Court of Appeal for Licensees.*—The Indian Electricity Act, Section 36 (3), states that an appeal shall lie from the decision of an Electric Inspector to the local Government. In practice the decisions or requirements of an Inspector, modified as they may be, and as the Federation knows they sometimes are, by the Chief Engineer of the province, are issued by the Chief Engineer in his capacity of Secretary to Government in the Public Works Department, and if the licensee wishes to appeal from the decision, the Appellate Court in practice is also the Chief Engineer, in consultation with the Electric Inspector. Commonsense dictates, and experience confirms, that an Appeal Court of this nature is of scarcely any value, and the Federation asks for entire separation of the executive and judicial in these matters.

The Federation has already suggested, at the Government Electrical Engineers' Conference, that there should be an Imperial Appeal Court composed of the Electrical Adviser and Director of Industries, and now suggested that the Appeal Court should meet twice a year only. To avoid vexatious references a forfeitable deposit of, say, Rs. 150 might be demanded from each licensee when filing his appeal.

5. Apart from the question of alteration in the administration of the Act referred to in the above paragraphs and hereafter, the Federation also wishes to put before the Commission its views on the important subject of the means whereby Government action financially may encourage and foster new electrical developments.

6. *Development of Town suppliers.*—There are many smal towns in India wherein a supply company could earn a reasonable return on its capital but hitherto great difficulty has been experienced in raising enough local interest in such schemes to produce a sufficient financial backing. Some municipalities have gone to the extent of guaranteeing to take a certain amount of power per annum and others have guaranteed to pay a certain monetary sum for street lighting, but experience has shown that neither of these forms of guarantee are sufficiently attractive as they are not understood by the general public who look for a definite guaranteed interest on their money. The result has been that the major portion of the capital hitherto invested in existing undertakings in India is drawn either from England or from large industrial cities, such as Bombay or Calcutta, and local interest which is such a desirable feature does not exist.

From an industrial point of view electrical undertakings differ from other manufacturing concerns and have two peculiarities, one of which is that they do not produce a commodity which can be bought and sold in other markets, thus becoming a source of profit to dealers or merchants. These schemes therefore fail to interest traders as does an ordinary manufacturing company and it becomes necessary to attract investors in some other way.

Another peculiarity of supply companies is that, in the case of smaller towns anyhow, it is not feasible to start with a small capital and build up a business as the concern flourishes, to anything like the extent possible in other industrial enterprises. There is a minimum expenditure possible for plant, mains and buildings which minimum may mean as much as 75 per cent. of the capital value at the end of ten years working and is often a very substantial sum, also there are heavy outgoings for the payment of a full staff which is necessary as soon as supply is started, all of which takes place without the possibility of any return until it is convenient for other people to make a considerable outlay in wiring their houses. The result is that few companies are fortunate enough to earn sufficient to pay their way, until they have been established for two or three years. As against this disadvantage, supply companies however have an advantage not often enjoyed by other industrial enterprises namely that they seldom lose customers; for when a

house is once connected (except during temporary periods, such as when the house is empty) they can be reckoned on as a consumer for all time and a constant source of income. Thus the business is an ever and surely increasing one, not subject to market fluctuations and slumps, such as other businesses suffer from.

This being the case it is quite a sound business proposition for Government to guarantee a minimum return to investors in supply companies—provided, of course, that they first satisfy themselves that the town under consideration is sufficiently wealthy to support an enterprise of this nature. As a return for the capital guaranteed and to recoup the sums they would probably be called upon to pay out during the first two or three lean years, it could be arranged that they should share in profits which may be earned by the company over a fixed percentage (of, say, 5½ per cent.), half of the excess above this figure going to the shareholders and half to Government in perpetuity or some scheme on the lines suggested in our Chairman's speech at the Electric Inspectors' Conference. Such an arrangement is a much more equitable one than that of giving Government a special rebate on bills for current supplied to their buildings which has the effect of delaying the time when the company could afford to reduce to the public the rate fixed upon when it first started business.

Another retarding factor in supply company development is the system of finance adopted in making loans to municipalities. Many cases occur where pumping for waterworks and sewerage is in existence and which could easily be adapted to working electrically. The stumbling block against this hitherto has been that municipalities claim they can pump at a cheaper rate by using their own engines and staff than a supply company and figures are produced in support of this statement.

On investigation, however, it is found that as far as fuel, oil stores and running staff are concerned, the supply company can do as well if not better than the municipality, but where other charges are concerned, such as return on capital repairs and depreciation, the supply company's costs are considerably higher.

The reason for this appears to be due to the fact that money can be borrowed by municipalities from Government on terms quite impossible for the company to obtain from the public. In one particular case a municipality borrowed at 3½ per cent. payable in 30 years or an equivalent of 3⅓ per cent. depreciation on the plant. Needless to say long before the 30 years had expired and the first loan redeemed a large portion of the plant had become useless and a fresh loan was obtained wherewith to purchase new plant. This method of obtaining money for renewals and depreciation of plant is commercially unsound, but all the same was the basis on which the municipality calculated their total costs.

As the company, as a business concern, had to set aside adequate sums to provide against obsolescence, depreciation, renewals and interest on capital, their total costs were considerably in excess of the figures put up by the Board.

There are many towns where pumping schemes are maturing at the present time, the load for which would form a solid foundation for the development of a supply company, but, under conditions as instanced above, negotiations usually come to a standstill and the opportunity goes by.

To meet cases, such as the above, we suggest that a rate be charged based on actual cost price of current supplied for pumping or whatever operation it is *plus* a percentage which cost can be easily ascertained by reference to the company's accounts.

As the outside load develops, so this cost will fall until in course of time the municipality will be able to get its power at a low rate and a further object is achieved in that electricity is introduced for street lighting and developing small industrial concerns as well as for private lighting and fans. A certain amount of knowledge is required to be able to forecast the electrical possibilities of any particular town; but the Government of India has an official in its Electrical Adviser who would be in a position, in conjuction with the proposers to form an accurate judgment on this point. As mentioned above, the possibilities of small towns are numerous, and it is only necessary for Government to treat the whole subject in a sympathetic and practical manner to enable these schemes to mature and develop.

7. Since the above memorandum was prepared, members of the Federation have had an opportunity of seeing the recommendations of the Public Works Committee in regard to the encouragement of private enterprise, and they wish to express their great appreciation of the policy embodied in the recommendation and their agreement with practically every point raised.

8. *Suggested improved status of the Electric Inspectors.*—This matter was very fully discussed by the Federation, and its opinion is that in view of the large and further expected development of the electrical industry in India, the status of the Electric Inspectors should be much improved.

The Federation understands that in some provinces Electrical Inspectors receive a commencing salary of Rs. 400 per mensem and are appointed under Section 36 of the Indian Electricity Act, 1910. Clause 2 of this section states that the local Government may, by notification in the local official gazette, appoint duly qualified persons to be Electric

Inspectors. The Federation is not aware of the qualifications called for by Government, * but is of the opinion that they should be of a high grade and considers the following qualifications should be aimed at:—

The Electric Inspector should have a thorough training as an Engineer. This training should consist of at least 3 years in large engineering works and 2 years at a technical school or college.

The Electric Inspector should have had at least ten years' service with an electric supply corporation, the latter portion of this training in the distribution department. With this experience he would have to deal with the business side of undertakings as well as the technical side, particularly the distribution.

The age for an Electric Inspector should be not less than 32 years and the commencing salary should be not less than Rs. 800. With this scale of salary the Federation considers Government would be able to obtain a suitable class of officer to deal with the Electric Inspector's duties thoroughly and efficiently from the Government's point of view as well as the licensees.

WITNESS No. 473.

MR. W. A. FRAYMOUTH, F.C.S., *Managing Director, Eastern States of Central India Export Trust Company, Limited, Maihar, Central India, and Director, Esociet Tannin Research Factory, Indian Munitions Board.* Mr. W. A. Fraymouth.

WRITTEN EVIDENCE.

The future of hides and tanning in India.

In submitting the following to the Indian Industrial Commission, I would explain that my ideas are based on my personal experience during six years work with the worst quality of hides in the whole of India, and during the last 9 months, with high quality hides as tanned in the Government Tannery, Allahabad, and in the Research Factory.

I would state at once that I had no experience of hides or tanning before the year 1910, but that I have had considerable previous practice in chemical and general technology.

It will be remembered that a year before the outbreak of war, there was much agitation by Indian firms and others, to protest against a strong combine of German and foreign firms, who attempted to control the business of export of hides from India.

There is no doubt whatever that Germany systematically bought huge quantities of hides during the 20 months before the war, thus raising the price of raw hides throughout India, and that these were bought for the purposes of the war.

It is known that during the last 20 years, the export of hides was in the hands of German and Austrian firms and that British firms did not participate to any great extent in this huge trade.

If these conditions are to be altered in the future, steps must be taken and as a first step, Hides.
it is quite clear in my mind that it is essential to the hide and leather industry of India that the whole system of hide collection should be revised.

We are faced with the fact that at least 12,000,000 hides are available in India every year, as hides that are taken off the animal after natural death. The number of hides that are taken from slaughtered animals is relatively negligible and in any case these hides are so good that they can look after themselves. We need, therefore, only consider the "dead hide."

This category includes many hides which are classed as "slaughtered" or as "commissariat" in the markets of India and when exported, but I would make it very clear that the highest qualities such as "Best Dacca Slaughtered" as selected, baled and exported from Calcutta are nearly all "dead hides."

Real slaughtered hides can obviously only be available where there is a demand for beef and the few centres where such a demand exists in any degree can easily be imagined.

It is an open question, whether a hide that is taken off an animal directly after natural death, is of less value to an expert tanner than one which is taken off after the animal has been slaughtered and bled. In any case a dead hide which has been flayed carefully and which goes at once, while "green," into the hands of a careful tanner will afford very good leather.

Although the conditions in my States are not exactly similar to those in other parts of India, I may here describe the usual way in which the hide from a cow that has died is treated. The animal is taken ill, say with colic. It is brought in to near the homestead and there attempts are made to doctor it. The remedies usually fail and the animal gradually dies, so gradually in some cases that its hide actually rots before the animal is dead. We must realise

* The required qualifications are laid down in Indian Electricity Rules, No. 8.

that in no case will the owner put the animal out of its misery unless in the rare cases when a non-Hindu hide merchant is the owner. When quite dead, or at the moment when the carcass becomes objectionable, the local chamar is called in to remove it.

More often than not the low-caste chamar may not enter the precincts where the carcass lies. Ropes are tied to the animal's legs and it is dragged on its side for perhaps a half-mile.

This custom is the cause of the commonest fault on the dead hide, *i.e.*, "scratched" or "rubbed grain." The chamar does not always flay the animal at once. More often the carcass is visited by carrion birds which peck at the hide, until it is covered with scratches and tears, before it is flayed.

The hide is taken off, usually carelessly with resultant "butcher cuts" and it is allowed to dry as it is, without stretching or cleaning. No subsequent care is taken to store the hide properly and so eventually it reaches one of the centres where hide dealers wet it down, stretch it and smear it with salt and plaster to cover up the evident faults.

It is these hides that eventually are sorted and baled in Calcutta for export. It is only from the published export figures that we can estimate the number of hides that India produces, but from my experience in our States I feel quite certain that for every hide that reaches Calcutta, at least one more hide is spoilt completely and is thus lost. At the lowest computation this means a loss of half a million pounds sterling per annum.

Some 5 years ago, I was called upon to sell big lots of the ordinary badly collected "real dead" Central Indian hides. While these could be sold, as they were at 7 annas per lb; by cleaning, stretching, disinfecting and classification I was able to sell them at 12 annas per lb. Thus I found the secret of the German firms' success:—*Classification.* By taking infinite pains to put a general average class of hide in each bale, the hide expert was able to supply the continental tanner with exactly what he wanted. Having bought a bale of say, X-2 mark hides, the tanner knew that he would get the same quality as he had previously bought under the mark X-2.

Prior to the German interest in this trade it had been the custom to send all hides direct to London, there to be auctioned and dealt with by the London hide experts, whose firms used to take the profits on sorting and classification, but even then, I am told, the bulk of the low class hides of India went to the continent, where by special means big profits were made. The British merchants thought there were no profits in low class hides.

The others knew better and in face of the German methods the old trade languished practically to extinction.

It will be asked why the British export firms do not engage hide experts and copy the German classification? Such experts are not easily found. A good judge of hides; one who can detect any fault, in spite of all the tricks to conceal the faults, is difficult to find because such faults in hides in the raw state are not self-evident.

There are very few judges of a hide and the reason is not far to seek. It is not an ideal profession and it necessitates the closest supervision daily in very malodorous hide yards. It is not surprising that such conditions in India's climate have driven most people away.

I regret to say that I have little hope that the great British firms in India will attempt to take up this export trade, and, as in common with many others I greatly desire to see the development of the leather industry in India, my special investigations have been turned in another direction.

Although it is extremely difficult to judge and select raw hides, it is *not difficult* to judge good leather. The faults in a raw hide are *not evident.* After the raw hide has been wetted down and treated by the liming process, previously unseen faults disclose themselves. What was a mere "flatness" of the hair in the raw hide, may appear as a great gaping hole "after lime" (note, that the Government Harness and Saddlery Factory always buys hides on a *limed hide basis*). There are other faults that appear only after the liming process, and even after bating, *i.e.*, during the tanning process.

The tanned but unfinished hide (so-called half-tanned) *has no faults which are not evident.* Any intelligent man will learn to judge tanned leather in the unfinished state in a few weeks, simply because the faults are all evident. Further, the handling of clean finished leather is not repulsive. It even has its charm!

If the fact be added to these considerations that the Indian hide can be tanned and perfectly preserved with indigenous tan-stuffs and by indigenous methods, in any part of India, at a lower cost than elsewhere in the world, then there seems to be no other reasonable conclusion but that great efforts should now be made to tan every Indian hide with Indian tan-stuffs, calling to our aid the great export firms to finance the purchase of hides to be turned into leather in Indian tanneries and to handle them at the ports.

When in 1911, I commenced to try and improve the collection of hides in the Central Indian States, I introduced the use of alkaline arsenite of soda, in weak solutions. Dipping the freshly flayed hides in this, or painting with this on both sides of the hide, are equally successful in arresting all putrefaction and in serving as an insecticide. After tanning many thousands of hides and skins so treated I have found no trouble in the subsequent tanning process which could be traced to the use of this chemical.

Experience has shown however that this solution cannot be sent into every village. Though fortunately no trouble resulted from the use of this strong poison when used by an intelligent subordinate in larger centres, yet the possible risk and danger of sending it out to be used by chamars in distant villages, without supervision, are too great.

The fears expressed by cattle owners that cattle will be poisoned cannot be overlooked but they are in many cases the mere cry of those who are opposed to progress and who look on unmoved while wealth is destroyed.

I have therefore come to the conclusion that a poisonous preservative cannot be used.

The usual preservative in use in those parts of India that take any care of their hides is "Khari" salt, a mixture of sodium chloride and sodium sulphate. When well rubbed into a fresh hide this Khari preserves the hides, although it is not a perfect insecticide.

The tanner on the other hand objects to Khari as a preservative and I have experience to show that it causes damage to the grain. Mr. Shewan of Cawnpore and Mr. Das of Calcutta both condemn the use of Khari.

We are thus thrown back on the use of ordinary table or common salt, and when this is used in relatively large quantities, and particularly if the wet-salted hide reaches the tanner within 10 or 15 days, without allowing the hides to heat, a very fine hide is the result.

These conditions are not always possible, especially in the hottest month of the wet weather, and so we in our States, have been reduced to the following process:—

Flay carefully, remove excess flesh and trim off ends of shanks, tail, etc., lay on the ground in the shade and rub in common salt (not Khari). Gradually the hide will begin to absorb the salt, eventually drying. Move often, without putting in the sun, dry, by hanging in a frame if necessary, and when quite dry, fold once down the back with the hair inside. If the hides are stored in a heap, handle them over twice a week, searching for insects or hair slip. If such be detected, then clean and rub in a little more salt. It may be possible to use some formic acid with the salt when such chemicals are available after the war.

The above is, in my opinion, the most practical and simple method for use in the jungle.

In spite of the great impetus to careful curing afforded by the high prices paid for India's dead hides during 1912-13-14 and the careful teaching given to hide collectors by the German and Austrian firms before the war, the greater number of the hides of India are spoilt by bad flaying and bad curing.

It is here that I think that Government will find an excellent way to increase the wealth of the country and consequently increase revenue:—by instruction, reward and penalty, to induce greater care in curing and collection of the hides of India. I personally feel that the present destruction of wealth ought to cease.

Although the general average of the hides that we now collect in our States is better than it was, owing to the high prices we have paid for good hides, yet the progress during three years of sustained effort has not been rapid. For this reason Government cannot expect immediate or direct results and the cost of teaching the people how to collect hides properly will be high.

We have found that the worst factor that we have to deal with is that even the rottenest hide has some value in the market, and this is because the dealer always puts some of the poor hides into a bale of good ones. It is the custom. Similar adulteration is common in other branches of India's trade.

We have lately introduced the rule of payment for hides of a certain length instead of the old payment by weight which only encouraged bad flaying and the application of dirt.

The small Tannery.

Owing to the generosity of the States of my concern the Eastern States of Central India Export Trust Company Limited (Esociet), and lately of Government through the Indian Munitions Board, I have had the opportunity of three years' research on little known and undeveloped tanstuffs of Central India, and India generally.

In order to investigate these tanstuffs and to prove their value, in the only way that I consider satisfactory, *i.e.*, to make leather from them, I built a small tannery, the original capital cost of which was ₹5,000.

We started tanning skins early in 1916 and our balance sheet at end of August 1916 shewed:—

				₹	a.	p.
Tannery; Profit						1,212	11	6
Sales			1,263	11	0			
Stock			9,684	12	6			
			10,948	7	6			
	₹	a.	p.					
Less purchases	6,583	14	0					
Treatment charges	3,151	14	0	9,735	12	0		

More than half of this stock had been sold before the auditors finished the balance sheet.

This small tannery has continued to run profitably with the exception of a loss on skins when export was stopped.

We have now converted our business into a cow hide tannery which is producing half-tan cow hides which we are offering for export to the war office.

From my experience I have formed the opinion that it will be possible (in peace time and if measures are taken to discourage the export of hides as raw hides from India) to erect and start a tannery in almost any part of India, at a capital of less than ₹10,000, to produce 10,000 lbs. of leather per month at an average profit of 2 annas per lb. Even allowing for spoilt batches and other troubles of the tanner, this means a very high return on capital block invested. The capital necessary to buy the hides and cover the time of tanning and sale, will of course be a much greater sum, but this working capital would not be put up by the small tanner. I feel sure that the great export firms would advance monies against hide value under process and sale at 1 per cent above bank rate, as has been done for years in the hide trade and in other industries in India.

There are many such tanneries now existent in India, but not all over India.

The right owner for such a tannery is to be found all over India; the Musalman who has made money in the raw hide trade. He knows how to buy hides. He will never make a mistake; also he is of the class to whom money can be lent with a great degree of security.

I would place one of these numerous small tanneries in almost every small town, all over the country, for it is always possible to get a certain restricted number of chamar labourers in any small town throughout India. It is not possible to get say 5,000 tannery hands anywhere, except after long years of tending and teaching of a community at huge expense and trouble. Two hundred chamars can be got in any locality and, properly handled, they make excellent factory hands.

It will be necessary to train young Indian tanners. I think the sons of those who previously dealt in hides would afford the right material. Although I know of one or two Indian gentlemen who, having been trained in Europe, are quite capable of running a tannery successfully, I know only one really brilliant Indian tanner and have heard of one more, and I do not think that a foreign training is necessary, except after two or three years practice in India and then only for the exceptional man. Two years' practice in a properly run model tannery would be sufficient to turn out a useful foreman tanner.

It is possible to get lime, oils and other tannery stores in almost every part of India. I am of the opinion that almost any potable water can be used to produce good leather.

Tanstuffs.

There remains only the problem of the tanstuff and how to use it. It is possible that *Turwad* (Cassia auriculata) can be grown in nearly every locality in India, and if it is possible to get cheap and regular supplies or the bark of the twigs of this plant, the tanner is provided with a most exceptionally excellent tanning agent which can be applied by a fool-proof process. It is, however, difficult to imagine organised supplies of *Turwad*, except in a few localities in Southern and Western India.

It will be necessary for some years at any rate to turn to other scrub jungle trees which will yield good tanstuffs without destruction of the tree. I am of opinion that such tanstuffs can be found, and after proper research to determine all pitfalls and adverse factors, certain mixtures of these tanstuffs could be prescribed to suit each locality.

Such mixtures would be applied direct like *Turwad* in "contact tanning," perhaps with local modifications. I am at present occupied in the effort to work out such methods on the commercial scale. I find myself opposed by all European tanners, but as their system of tanning cannot be applied by the small tanner in India, I am determined to follow up my so far successful results and feel confident of the ultimate result. I have formed the opinion that tannin extracts will not succeed if applied by the small tanner, although India will probably find some natural tanstuffs that will produce valuable extracts for export. I do not expect to see many successful applications of the process of extraction and solidification, but I am certain of a most successful export trade in carefully collected and concentrated tanstuffs, direct from the jungles to European markets. The possible mixtures of scrub jungle tanstuffs now known, offering the best promise of suitability, run into hundreds and the species to afford these are found from Victoria Point to Karachi. We have been able to establish the value of five or six new tanstuffs (new as applied in this manner, but not new to the chamars) and we have discovered one entirely new tanstuff, "Karunda." My Committee of Control after the examination of our first leathers has recommended that these and other proven tanstuffs shall be tested on the tannery scale without delay.

The output from the many small tanneries throughout India would be sold as good, but unfinished leather (crust or half-tanned leather) to several great export firms with headquarters at the ports. These firms would have well lighted and properly constructed sorting godowns at the ports. Here all leathers, good and bad, cows, kips, goats, sheep, etc., would be sorted, if necessary, into thousands of qualities and marks, each to be consigned to a special buyer in some part of the world. Selection must be extremely strict and exact, and the more qualities and sorts, the better, so long as the buyer *always* gets what he expects. I think a Government export certificate would be of extreme value here.

There will be room for finishing tanneries in India, but I regard it as impossible to carry on such businesses without many lakhs of capital. I would put no machines in the smaller tanneries, beyond perhaps simple wooden drums and a crusher in those where the size of the business would warrant such.

As regards chrome tanning as a means to work up Indian hides, I do not believe in its immediate future, chiefly because it requires a good hide. There is lots of room for chrome tanneries in Calcutta, Bombay and the ports, where perfect slaughtered hides are available and possibly for half-chrome finishing tanneries, but for the ordinary dead hide of India, India's natural tanstuffs are the right thing.

I consider that one of the first essentials to such successful indigenous industry is that the Forest Department should pay special attention to the getting of tanstuffs from its forests. It will be quite impossible for the present staff to do more than they do now, and it will be necessary to convince the Forest Department that tanstuff exploitation will pay. It must be remembered that tanstuffs are to be got in greater quantities from private forests near the rail, than from Imperial Reserve Forests where the goal aimed at has been to get timber.

I know of thousands of maunds of valuable bark and leaves that are now left to rot on the ground, simply because the contractor who takes a coupe for firewood or charcoal, does not know the value of the bark and leaves.

The pioneer work that the Forest Department did many years ago to get out timber, to perfect the process which now runs on oiled bearings, has now to be repeated with tanstuffs. The tanstuffs will not come out of the jungle by themselves. Neither will they come out unadulterated and containing the maximum of tannin, without devoted supervision. The tanneries will have to pay good prices if they want rich tanstuffs.

The next essential is that the railways must fix a low freight rate on tanstuffs. Let them not look to make a high profit on the first freight on tanstuffs. Let them rather realise that, if the people along their lines are paid for getting out a new product, the railway's real profit will come out of freights on leather, and even more out of freights on other commodities which will be imported and paid for out of the new monies that the people earn by collecting products from the jungles that were previously of no value.

The railways all carry raw hides at very low rates which were probably granted to the German firms who worried the Companies until the rates were reduced.

The East Indian Railway have recognised the above principles and have fixed a rate:—

1 to 300 miles Rs. 0-2-6 per wagon mile.
301 and over „ 0-2-0 „ „ „

If this rate could be accepted by all railways from any station to any station *vid* any station, from any broad gauge railway on to any broad gauge railway, and if the railways will allow any degree of crushing and close packing, and if instead of several dozens of classifications they will put in each goods tariff:—*Tanstuffs natural, to include all barks, leaves, fruits, crushed or uncrushed that may be used in tanning,* one of the greatest difficulties that I have met in three years pioneer work in this industry would be removed. The Indian Munitions Board has persuaded the Railway Board to recommend these new conditions to the railways. Very few railways have taken action in these matters yet.

I believe that if Government could establish a Leather Survey as a department to improve collection of hides, to encourage exploitation of tanstuffs, and to foster small tanneries, and will adopt some measure to stop the export of raw hides, we will see a really vigorous indigenous industry, an industry well suited to India, and one that will do more to increase general revenues than any that I know of. **A Leather Survey.**

I feel assured that the Indian Munitions Board has made a most useful move in the right direction in the establishment of the Esociet Tannin Research Factory.

The many enquiries that we have had, and the appeals for help and advice that have come to us from those who own, or who propose to start small tanneries, have shown us that not only was there a need for such an institution but that we will only be able to deal with the work to be done in the central parts of India and that our range of influence should not stretch further than over a radius of 300 miles at the outside.

The Director of Industries, Bengal, is moving in the direction of the establishment of a research factory for Calcutta and there is a leather school at Madras. I feel certain that a research factory in Bombay could do splendid work.

It is essential that the work of these institutions should be practical, and tests should be carried out on a practical scale. There is nothing more misleading than a small tanning test.

The work to be done in these research factories should be co-ordinated to prevent overlap in research, and this can best be done by committees of control, with representatives from other centres to criticise the work in each research factory.

I strongly recommend that visits should be paid by those researching to the small tanneries of the country.

My experience is that any aid that is offered tactfully is gratefully accepted. I believe that really vigorous propaganda of carefully proven facts will do great things. But it is not sufficient to publish laboratory results. The methods must be proven on the commercial scale, and those who wish to learn must come and see the operations. I would place on record this warning; tanning research takes time! Five years would be nothing to prove the value of one tanstuff!

My critics will ask why I advocate half-tanning, and why I do not advocate the immediate production of finished leathers in India.

I have the greatest belief in the future of finishing and currying leathers in India for export, but I feel that if we can firstly succeed in half tanning our hides, to produce sound crust leather and persuade tanners in Great Britain and elsewhere to leave us our first profit, while we leave the finishing profits to tanners overseas for the present, we will be likely to succeed, because we will not be attempting too much, and because India is not likely to receive many favours unless she offers inducements to gain friends abroad.

I advocate research in India with a view to demonstrate what can be done with the raw or half-refined products that suit India's interests. If technical emissaries can be sent home, to push such products amongst technical men at home and abroad, I am certain that larger demands will be made for India's products; and particularly for those products which leave most money in India.

APPENDIX.

Esociet.

Prices for produce to be paid at Maihar Factory from 1st January 1918 until March 31st 1918 or until further notice, as decided by the Board of Directors in meettng.

Hides. Special War Rules. Hides will no longer be purchased by weight, but by the piece, according to size. This is to prevent valeuless flesh and dirt being sold as hide matter.

Measurements of length will be made from a point on the neck, 4 inches behind the back of the ears, down the spine to a point two inches from the root of the tail. Hides will be laid on the ground without stretching for measurement. Width will be disregarded because the thinner belly parts of the hides are not required for war leathers.

Classification will be strict, as follows :—

Extra quality; a wet salted or fresh "green" hide without flaw or blemish.
First quality; dry salted, not more than one flaw.
Second „ dry salted, not more than three flaws.
Third „ dry salted, not more than five flaws.

Scratches, holes, hairslip, flaying cuts, goad-marks, yoke-marks, pock-marks, warble-holes, Sun-drying faults and unshapeliness are all flaws.

Nistar claims are to be satisfied with rejects from collection centres.
Mhote claims to be satisfied with leather.
Local pot tanning to be discouraged.

All other hides outside the above classes will be brought to Maihar, where they will be paid for at current market rates.

All four qualities as above are to be flayed clean of flesh, without useless shank-ends, tails, etc., they are to be salted with rock salt or country salt and not with Khari salt and to be dried in the shade, smooth and flat, finally they are to be folded along the spine with hair inside. Unless hides are cured exactly as above they will not be accepted in the abcve 4 classes.

The cost of salt will be paid at Maihar, from 2 as. to 5 as. per hide according to size. The cost of transport to Maihar and the expenses of the collector or contractor in bringing the hides to Maihar will be paid.

A duplicate of the classification certificate and bill will be sent in all cases direct to the Durbar concerned. Payment will be made at Maihar to the contractor or to the Durbar concerned as desired.

On the above basis and to produce war hides the following special prices will be paid :—

				Extra	I.	II.	III.
Large cow	5 feet long and above		Rs.	5/-	4/-	3/-	2/8/-
Army kips	3 „	„	„	4/-	3/ 8/-	2/8/-	2/-/-
Calves	2 „	„	„	1/-	-/12/-	-/6/-	-/4/-

All below these sizes and qualities will be sold as rejects.

Large Buff	5 feet long and above		Rs.	3/12	3/4/-	2/12/-	2/4/-
Medium Buff	3½ „	„	„	3/4/-	2/12/-	2/4/-	1/12/-
Calves	2½ „	„	„	-/12/-	-/8/-	-/6/-	-/4/-

All below these lines and qualities will be sold as rejects,

At least 10% of value will be paid as royalty, but a higher rate of royalty is being worked out.

No goat or sheep skins will be purchased by Esociet in view of the wishes of Government that no skins are to be tanned. Skins.

Wild skins will be purchased at current market rates.

Gok or Monitor skins 6 annas each for No. I's, and proportionately lower prices for smaller and badly collected skins. 2 annas per skin will be paid as royalty.

Lac is to be paid for at a price, at collection centres, to be settled later, which shall include all cost of picking, cleaning and storing and special supervision.

The cost of propogation shall not be included.

To this shall be added a royalty on the same basis as that paid by Esociet to the C. P. Forest Department as present equal to Rs. 40/- per maund.

Tanstaffs—At cost price plus 2 annas royalty.

SUPPLEMENTARY EVIDENCE.

Q. How did you arrive at the estimate that 12 million hides are available in India every year, as hides that are taken off the animals after a natural death? The seaborne trade returns for 1912-13 show that 13½ million raw hides were exported from India. Have you any information as to the number of hides used in India for water bags and for leather, for internal consumption, in the form of boots, shoes, sandals, harness, etc?—*A.* I gave 12 million as a figure that I have arrived at by study of statistics, from my knowledge of the qualities of hides which are used by the existing tanneries in India, and above all from my experience of the quality of hides that were exported from Calcutta. Taking the 13½ million figure, I allowed for an excessive export in the years immediately before the war. I allowed for the ever-increasing care of cattle. I then allowed for the small number of real slaughtered hides (I will call these "slaughter house" hides because the word "slaughtered" is used in the trade to describe a good "dead"), that could have been exported after the big tanneries in India had taken what they could get of the "slaughter house" hides.

I understand that a big slaughter house such as that in Calcutta affords about 1,000 hides per day (of all sorts and with many very small hides). A slaughter-house like Allahabad affords some 50 per day. Saugor, in the Central Provinces, produces some 500 hides per day, but not all from actually slaughtered animals. Unless those areas in India which are populated entirely by Mussalmans produce an excessive number of "slaughter house" hides, I cannot arrive at a total exceeding one million per annum of "slaughter house" hides.

During the last six years I have seen that the big tanneries of India have purchased as many "slaughter-house" hides as they could get. The better-run Turwad tanneries of the South have taken as many "slaughter-house" hides as they could get. Allow for this internal consumption and there will be very few "slaughter-house" hides available for export. The number of animals actually slaughtered in India must be extremely small in proportion to the total number that die a natural death. In my opinion not more than 10 per cent. I have no actual figures and would like to know them. Such figures should be classified into weight classes. I cannot but believe that under the conditions of religious scruples and lack of money to pay for an expensive food like beef, coupled with the existence of extremely cheap goat's meat, any extensive slaughtering can exist even in the few districts that are populated by Mussalmans only. Of such districts I have little experience.

I cannot tell a "slaughter-house" hide from a good "dead" or those "deads" that are classed in the trade as "commissariat" or "slaughtered" when both are put before me, properly prepared, in either the wet-salted or dry-salted state. I doubt very much whether anyone can. I am prepared to cure some of the better collected dead hides from our States, and to mix them with "slaughter-house" hides cured in the same way, and to challenge any hide expert to differentiate between the two.

If, however, I examine hides during the processes of liming and tanning, I *can* say which has been taken from an animal that was slaughtered and which from an animal that has died a natural death.

I have evidence from another side. I was lately sent to purchase hides in Calcutta. I took 2,000 of a lot, "slaughtered" that had been selected by the expert Germans as the finest qualities (B. D. S.) and as they lay "faked up" in Calcutta, I could have believed that many were really "slaughter-house" hides.

I have since seen these hides through lime and now know them *all* to have been "dead" hides!

Further, the price of "slaughter-house" hides during the last nine months, under conditions of export stopped or controlled, has been such that no one could possibly buy them (7½ annas per lb. wet) and deliver leather to the Controller of Hides at Rs. 1-4 per lb., while "commissariat" and "slaughtered" hides were to be purchased at much lower prices which afforded the tanners a fine profit at Rs. 1-4 per lb. of leather.

Thus I conclude that most of the hides that were exported before the war were those which had been taken off the animal after death, and that the "slaughter-house" hide was largely absorbed by the existing tanneries. The existing tanneries will want all that will be available of those which are of suitable weight and quality after the war.

I have no definite information as to the number of hides used in India for local leather consumption except that we allow a full 15 per cent. of the hides of our States, as "nistar" (or those hides which are required for local uses) which are given back to the chamars.

If my impression is of any use, I would say that I think one hide in five will be wanted for local uses in our parts of Central India, as soon as the methods of tanning can be improved. As the well-being of the people increases, the demand for leather will increase.

Q. What proportion of the hides available in India are suitable for the chrome-tanning processes?—*A.* If I am right in the above conclusions, there will be very few hides available for an extension of chrome-tanning. To draw on the supply of "slaughter-house" hides will be to hamper the existing tanneries. After an attempt lasting several years, I am certain that the low quality "dead" hide cannot be worked successfully with chrome salts and that much better results can be got with the many excellent natural tanstuffs of India. Although I expect the Commission has the information I must mention that chrome salts must no longer be considered as foreign materials in India. Mr. Das of Calcutta is producing chrome salts directly from chromite ore with which he tans good chrome leather. He says, however, that he must have the good hide to be able to do it.

Q. Do the conditions prevailing in the Central India States approximately represent the conditions prevalent in other parts of India? How have you arrived at the conclusion that for every hide that reaches Calcutta, at least one more is spoilt completely and is thus lost?—*A.* The conditions prevailing in Central India that I have described prevail *to my knowledge* all over the Central India Agency, in most parts of the Central Provinces (just around Saugor is exceptional), in most parts of the South of the United Provinces, even quite close to Cawnpore.

From hearsay, I believe that the conditions in most parts of Bihar and Orissa are the same.

I do not know Madras nor the Punjab, but I hear that tanners in both these provinces have the same trouble about spoilt hides. Whether the Mussalman States are better in this respect I cannot say, but so long as it is the custom to put a few rotten hides in each bundle, I would expect to find the same bad collection as I have described. In Burma, conditions are different, the Shan and the Chinese of the North particularly take care of their hides.

In certain areas in my States we have had reports from the civil authorities and the police as to the number of cattle that have died. The number of hides that we have accepted from these districts is less than one-third of the total that should have been available after deducting those returned for "nistar."

I include in those that are lost, *i.e.*, those that do not reach the tanneries or the ports, all those rotten and therefore cheap hides that our village chamars tan to produce pieces of leather which are good enough for local chaddah (shoe). I see huge quantities of these whenever I tour and we return such hides as "nistar." I have seen very many cases of a hide being so far rotted that even the village chamars will not tan them.

Q. Can you give any information as to the special means by which big profits were made on the continent from the bulk of the low-class hide exported from India?—*A.* Generally speaking, the continental tanners must have taken off the grain and have produced waxed or false grain leather. Mr. Das tells me that many of the Indian "deads" were half-chromed. I would refer the Commission to Mr. Das for information on this point; he worked in tanneries that treated such hides. I think that big profits were made because I sold third and fourth quality "dead" hides to Hamburg in 1912 at 12*d.* per lb.!

Q. Have you considered the possibility of dealing with hides locally by some pickling process similar to that employed with goatskins which, at one time, were largely exported to America from the South of India? If so, do you think it would be advisable to establish local factories in which hides would be limed, unhaired and pickled, such pickled hides being then sold to large tanneries for conversion into finished leather?—*A.* I have not attempted the pickling of "dead" hides. The pickling in the south was done with *slaughtered* goatskins, where great value could be packed into a relatively small space. I would fear the cost of the wet packing, casks, etc., with "dead" cow hides.

Thanks to a suggestion from Mr. Pilgrim, we have a method by which we can preserve a limed and bated hide for a long time. The solution contains 2 per cent. of Boric acid and 1 per cent. of Phenol and the effect of 3 weeks immersion in this is to greatly improve the grain of the hide besides preserving it. I am prepared to treat a big lot of cow hides in this way, and if Government will export them, we might then find out if the scheme is workable. I do not trust any experiment with less than 200—300 hides and deprecate any small tests.

I doubt whether the poorly supervised liming usual in small tanneries in India would ever afford satisfaction at a home tannery.

Having soaked, limed and pickled cow hides and having paid the heavy supervision costs necessary I believe the extra cost of tanning would be relatively very small. The tanner would have dry leather in bales for export and sale, while the pickler would still have raw hides and would have to pay the heavy freight on casks and wet packing.

Q. Can you supply a balance sheet showing the results of your small tannery at some later date than the end of August 1916? Are the supplies of hides and skins obtained at the ordinary markets or are they a monopoly of the State and therefore delivered at the tannery at rates much below their market value?—*A.* The balance sheet of the small tannery at the end of August 1917 shewed a nett loss, the profit during this second year on the tanning (about Rs. 8,000) being swallowed in a loss of Rs. 16,000 on goat skins when the export was stopped. Having paid some Rs. 2-8 each for skins in our States, we were unable to sell the resultant leather and so wrote down the value of our stock of tanned skins to 12 annas each. At the moment when export was stopped we were offered 4-6*s.* per lb for our tanned skins from Glasgow. We hold the tanned skins and propose to hold them until export is allowed. My States would not have approved of a publication of these troubles, for we know that the prohibition of export was necessary, and my fellow directors, the Dewans of the States, have no complaint to make under these conditions.

The balance sheet as at the end of September 1918 will be published in my reports of the Research Factory. I know that the tannery is paying well now.

The prices that Esociet has paid for hides in the States have been consistently higher than in the neighbouring districts of the Central Provinces and United Provinces. When we started buying in 1914 we paid as much as 10 annas per lb. all round.

We dropped prices with the slump in 1914-15 to 8 annas per lb. We have consistently raised prices for good hides since then *but we deliberately pay as little* as possible for the badly collected hide, which we sell again as it is. Our price to-day for a properly collected dead cow hide is 8 to 10 annas per dry lb., paid direct to the chamar who divides his gains with the cattle owner. Both of these get almost double the amount that their fellows in Central Provinces and United Provinces are getting. We have eliminated the middleman. We have only one measure to help us. Export from each State is forbidden and Esociet Limited offers good prices for well collected hides and poor prices for spoilt hides. We discourage pot tanning, but never by coercive measures. I notice that most of those who tanned in pots at home before, either come in to work on contract in our tannery, or devote themselves to hide curing. We have in view the establishment of a tannery in each State.

Large quantities of hides are brought in to us from British territory.

Q. What degree of success have you met with in the use of mixtures of tanning barks? On what grounds are you opposed by all European tanners? May we assume that although the results of your experiments are, in your opinion, promising, nothing has yet been demonstrated on a commercial scale, the general adoption of which throughout India could be advocated?—*A.* The exact present position of the work at Maihar and at Allahabad is that both tanneries are now putting out a regular flow of very high class leathers, closely imitating Turwad half tan, which have been tanned by the use of the new local tanstuffs. Within the next month Mr. Henderson, the War Office Representative, will inspect our work. I await his verdict with confidence. I suggest that the Commission should ask for a special report through the Controller of Hides.

In my Maihar tannery I am taking in and turning out 25 cow hides per day, and I know my costs for labour and tanstuffs are lower than the same costs in Cawnpore and Bombay. It will only be after our yearly audit in September next, however, that we can publish such figures as will prove the commercial success beyond doubt.

The mixture in use, Dhawa—Karunda—Aonla is as perfect a tanstuff as exists. Of this there is no question whatever, and its cost may be compared thus:

Turwad in Bombay . . .	5·3 as.	for each 1 per cent. of	tannin per maund.
Oak bark in England (pre-war) .	4·0 as.	ditto	ditto
C. I. Mixture in Maihar . .	1·2 as.	ditto	ditto.
Babul in Cawnpore . . .	2·0 as.	ditto	ditto.

While we are not using more tanstuffs per lb. of leather than the Turwad tanner.

I wish to impress upon the Commission that although the printed and published proof of success cannot be shown to-day, yet the complete success of what I went out to do, *i.e.*, to work out a simple indigenous process to produce perfect leather from local hides, local labour and local tanning materials is to be seen here *now*, and that I fully expect the published proven success will be available by the time the Commission can issue its report.

I do most strongly advocate the application of the simple indigenous process with system and cleanliness throughout the country (except in the great cities). This will do more to improve hide collection in India than anything else. Above all, it will do what we have done in Maihar, *i.e.*, double the income of the whole chamar community and consequently greatly increase the general prosperity of the place.

The European tanner is wedded to the processes (*a*) *leach the tannin out of the bark* and (*b*) *suspend or pack the hide with the filtered extract.*

I maintain, and have proved, that the two processes are unnecessary, that for the small tannery in India the one process of applying the crushed or chopped tanstuff with liquor direct to the hide, is the only possible method!

The best tanner in India lately said that I could never succeed and when pressed for his reasons said that the hides were of poor quality! This factor has nothing to do with the tanning method. There are others who do not want to see a large number of small tanneries in India. They disapprove of my methods. Success is already there however and I court enquiry and investigation. The best tanner in India lately said I was wrong, in that my mixture of liquor and ground tanstuff was thick and dense. His idea is that a liquor must be filtered and clear. I have held the opinion that the thicker and denser the liquor, the better leather would result, and with this idea selected that tanstuff which contains the most gummy and thick solution for early treatment of the hide with very great success. By last mail there arrived a technical journal containing the successful result of a research by Turnbull and Carmichael in Liverpool in which they actually added starch to produce the thickness and density by which they made better leather. I have not yet met an European tanner in India who is prepared to consider new methods with an open mind. On the other hand, two first class Indian tanners of my acquaintance think very highly of my results.

Although the President visited Maihar in 1916, I greatly regret that the Commission could not have come to see what we have done here.

Q. Are the conditions in an experimental tannery such as those at Maihar or Allahabad, suitable for the training of students? Would you advocate the establishment in other parts of India of tanning schools similar to that which has been started in Madras? Should such schools be really demonstrative factories working on a commercial scale and employing students as workmen under a trained and experienced staff?—*A.* I find myself in a difficult position in the matter of students or apprentices. My Committee of Control is most opposed to anything like a tanning school at Maihar. Personally, I realise most clearly that it is no good working out suitable processes to improve tanning in India unless we train men as practical tanners to work the processes. I have no desire to train managers or chemist-tanners who aspire to take degrees in tanning chemistry. I have seen so many hopelessly useless men with diplomas from European tanning schools who have no idea how to tan (I have said that I have met one brilliant Indian tanner with foreign training). I do not wish to suggest that the tanning schools at home are not excellent for home students.

In addition we have had over a dozen requests from established tanners and from Directors of Industries of the Provinces to take young men for training. The number of applications from individuals who wish to become tanners is very large.

My Committee fear that we may turn out a lot of young men who will not find a job. I have had some thirty young men here, out of which scarcely half a dozen have had the courage to face the dirty and hard work. I purposely put the would-be tanner to the most objectionable work at the start. This eliminates the waster quickly.

After much discussion, the present state of affairs is that I am permitted to take young men for training as working apprentices, at the request of those who can guarantee a future for the boy. There are six such boys now. Perhaps when my Committee sees the results of the training of these it will revise its ideas.

The ideal age to take a boy is, in my opinion, 16 to 18. The lad should start to work with his hands, learn to unhair and flesh a hide, learn the classification of hides and to handle them-through tanning with constant discussions as to why certain phenomena appear. He should learn the reason for everything. He should acquire the "tanners' sense." I would keep the boy at this for 2 years, and as far as possible limit his field to the production of crust leather. I would allow no students to have anything to do with finishing machines, or fancy dyeing and finishing experiments, during the first two years. At the end of two years an intelligent boy would be able to lime, bate and tan good leather and would know how he had done it.

Most of these foremen could go straight away to a job in a small hand tannery and they would easily command Rs. 30 to Rs. 50 per month.

I am of opinion that this training cannot be done in a big finishing tannery.

Out of these trained foremen I would select certain boys to go on to learn how to handle tanning machinery and to care for the machines. Having taught them this engineering side of the subject, I would teach them leather finishing, dyeing, currying, retanning, chrome tanning, etc.

This later training would take about a year, and if there should appear one or two really brilliant men who could be sent on to university at 20 to study science, it is quite likely that some efficient tanning chemists would result. Here India would find her tannery managers for the future.

I cannot imagine anything worse than to send a young Indian home to study at a leather school, take its easy diploma and return to believe that he is fit for a job as a tannery manager. Unless a young Indian can first pass a really difficult examination like the B. Sc, London, Glasgow or Leeds he should not be sent to take an easy diploma like those to be obtained at the tanning schools at home.

The conditions at Maihar are in my opinion extremely suitable for teaching young Indians to tan good crust leather and to become working foreman tanners. The conditions at Allahabad are not suitable at present, they could be made so.

Unfortunately, I have not seen the Tanning School at Madras. I do not advocate the purchase of a lot of expensive machinery for demonstration purposes in Government Tanning Schools at present. Let us teach some men to tan first. Certainly the young boy must work as a workman. The use of the word "students" is perhaps wrong, "apprentice" expresses what he should be. I advocate the early establishment of research factories which would have plenty of work to do in the study of Indian tanning conditions. Each should contain a running tannery in which good crust leather would be produced.

A small number of boys could be taught to tan by working under good tanners. The research factories at the ports can, even now, work on the finishing of leather, but to serve the greater part of the interior of India we ought to teach the people to produce good leather from local hides, local labour, local tanstuffs, etc.

Hand-worked tanneries to produce hand-finished leather.—I fail to describe the immense field for good work and proper application of Government aid that I can use in this direction. I have taken as my particular subject that of production of good crust leather from "dead" hide. I am pleased with my results so far. I feel that perhaps in 10 or 15 years time I may be *satisfied* with the results. I know of no other field of research with such scope.

In conclusion I regret that I have not been able to deal with the questions from the Commission as thoroughly as I could have wished. My chief assistant is at Allahabad and with 3 others of my staff away I have had little time to prepare these answers.

(*Witness did not give oral evidence.*)

WITNESS No. 474. *Mr. B. B. Osmaston.*

MR. B. B. OSMASTON, F.C.H., *President, Forest Research Institute, Dehra Dun.*

WRITTEN EVIDENCE.

Financial aid to Industrial Enterprises.

Q. 5. I have had little experience of Government financial assistance, to industries. My opinion is, however, in favour of guaranteed dividends for a limited period in the case of big enterprises and of supply of machinery and plant on the hire-purchase system in smaller concerns. **Methods of Government assistance.**

In the case of big enterprises as for instance the utilization of bamboos or elephant grasses for paper-pulp, I think Government should fix a fair royalty on the raw produce and should also guarantee a reasonable interest in the capital invested for a fixed number of years. It is up to Government to take this risk.

The Government should exercise no control over the working of the Company but should have the power to examine the books, etc., in order to keep in touch with the financial position of the venture.

Q. 7. My experience of Government pioneer factories is limited to the United Provinces resin distillery at Bhowali and its predecessor, which started on a very small scale, in Dehra Dun, some 27 years ago. The present methods have been gradually evolved as a result of many experiments. I think Government have undoubtedly been wise to keep this industry under departmental control. It has now developed into a very paying concern. On the other hand, had the very inadequate offers of certain firms been accepted and the industry made over to private enterprise, the Government would have had to be satisfied with very much smaller profits. **Pioneer factories.**

Q. 8. The extraction of major forest produce, timbers, sleepers, etc., from the higher Himalayas in order to give a maximum return or in some cases, to be profitable at all, frequently necessitates the employment of extensive engineering works, such as wet slides, wire ropeways, sledge roads, dry shoots and tramways. The construction of such works requires considerable technical skill and training and it has usually been necessary in the past for the Government to pioneer such work through officers of the Forest Department. After a number of years provided the local timber purchasers learn how to construct such export works the Government may cease departmental extraction and dispose of the trees standing in the forest, preferably on fairly long leases.

Technical aid to Industries.

Q. 15 & 16. I have held for the past 11 months the post of the President of the Forest Research Institute at Dehra Dun. During this period the Research Officers of the Institute, more especially the Forest Economist and the Chemical Adviser, have been in correspondence with many firms interested in the impregnation of timber, the manufacture of paper-pulp from wood, bamboos and grasses, matches, tea-boxes, bobbins, oil, turpentine, etc., and much information has been published by this Institute on the above and other subjects, in the shape of Records, Memoirs and Bulletins. **Technical aid in general.**

Loaning of Government experts to private firms.

Q. 17. I am not in favour of the services of Government Experts being lent to private firms or companies unless they are in possession of very special knowledge or experience which is not available elsewhere.

Q. 18. Provided he did not disclose any of the secrets of the private business to which the Government Expert might be attached he should certainly publish all the results of his researches.

Research abroad.

Q. 21. I have no personal experience of aid afforded by the Scientific and Technical Department of the Imperial Institute.

Q. 22. Provided the Institutions in India are properly and adequately equipped and staffed, I see no reason why all research work on Indian subjects should not be carried out in India. This would tend to expedite the attainment of results and at the same time reduce the expenditure.

Surveys for industrial purposes.

Q. 25. As regards forest produce, the resources of Indian forests are very imperfectly known. The areas occupied by the more important timber-yielding species, such as Teak, Sal, Deodar, Pines, Firs, Padouk, etc., are known with considerable accuracy and where working plans have been framed, there is some idea of available outturn but of the vast majority of accessory species very little is known of their distribution or possible outturn, and it is of great importance that the present available data should be supplemented by further surveys.

Q. 26. Owing to the inadequacy of the forest staff and to the vast areas included in the charges of individual officers the above surveys cannot be carried out by the local officers. Such surveys could best be carried out by the Working Plans Officers when collecting data for working plans. As a matter of fact in the ordinary course these officers are obliged to carry out surveys of the more important forest trees and this could advantageously and without much additional labour and expense be extended to other less important species resulting in valuable data relating to the distribution and available quantities of the various accessory species which are found in mixed forests. This information would be recorded, Division by Division, and the results would be tabulated by species with the aid of stockmaps.

Q. 27. The above information could then be made public through Directors of Industries and the Press.

Assistance in Marketing Produce.

Commercial Museums.

Q. 28 & 29. Commercial Museums, more especially at big industrial centres, are in my opinion eminently useful. The Economic Museum at the Forest Research Institute, Dehra Dun, is of recent origin, and as yet incomplete. Its primary object is educational.

I think that such museums might, with advantage, be started at other centres, and they could be organised and run by the proposed Commercial Branch of the Forest Department.

General Official Administration and Organisation.

Provincial organisation.

Q. 57. I do not consider that the establishment of a Board of Industries is desirable. A Director of Industries in each province would meet the case. He should, I think, be a business man, preferably, of course with some expert knowledge. The possession of tact is an important qualification for this post. His main activities would be in the direction of starting new industries and fostering existing ones. He would answer enquiries and publish information of industrial interest. He would, in fact, direct the work of the Commercial Branch of the Forest Department in consultation with the Conservators of Forests. Research work, laboratory experiments, etc., should form no part of his duties. These would be carried out by experts under central control.

Correlation of provincial activities.

Q. 62. Centralisation in the control of industrial development would, I think, be a mistake and I should not be in favour of an Imperial Department. The Directors of Industries in the various provinces would advise their local Governments and carry out the provincial policy.

The correlation of the activities in the different provinces could be attained by the circulation of the annual programmes of work; this would prevent unnecessary overlapping and duplication of work. The programmes might, with advantage, be drawn up at an annual meeting of all Directors of Industries, which would also result in a valuable interchange of ideas.

Organisation of Technical and Scientific Departments of Government.

Existing organisation of Forest research work.

Q. 63. The Forest Department, as explained below, is not at present constituted on the best lines for working in local industries. The existing staff is fully occupied with works of protection, maintenance, improvement and exploitation to which is added the ordinary administrative routine. As explained in further detail below, a commercial side to the Department is called for. Up to the year 1906 the scientific side of the Forest Department had received too little attention. It was in this year that the Government of India decided to start a Forest Research Institute at Dehra Dun. Their action in doing

this has since proved sound, and it is only to be regretted that it was not started sooner. Research work at this Institute falls under one of the following five sections :—

(1) Silviculture, (2) Botany, (3) Zoology, (4) Chemistry, and (5) Economy.

Each of these branches with the exception of (4) is at present in charge of a gazetted Imperial Forest Officer.

The Chemical section is under an Indian trained Chemist, who completed his education at the Tokio University in Japan. The President of the Institute (the post held at present by myself) is also President of the Forest College.

The following statement gives the strength of the staff—both gazetted and ungazetted—of the Forest Research Institute :—

Silviculture.

Silviculturist	1	(Imperial Forest Officer)
Assistant Silviculturists	2	(Non-gazetted Officers)

Botany.

Forest Botanist	1	(Imperial Forest Officer)
Assistant Botanist	1	(Non-gazetted Officer *)
Assistant Botanist	1	(Non-gazetted Officer)

Zoology.

Forest Zoologist	1	(Imperial Forest Officer)
Assistant Zoologist	1	(Non-gazetted Officer)

Chemistry.

Forest Chemist	1	(Held in abeyance)
Chemical Adviser (special post)	1	(Indian trained Chemist)
Assistant Chemical Adviser	1	(Non-gazetted Officer)

Economy.

Forest Economist	1	(Imperial Forest Officer)
Assistant Economist	1	(Imperial Forest Officer)

The sanctioned staff is inadequate to deal with the vast number of problems of all s which are bound to crop up in forests of every conceivable kind ranging from tropics to the snows and from areas where the annual rainfall is anything between 4 and 400 inches, and where there are over 4,000 species of trees and shrubs to be dealt with.

Silvicultural enquiries, which have for their main object the attainment of a maximum sustained yield compatible with the proper maintenance and improvement of the growing stock, should receive first attention.

The amount of Silvicultural research which ought to be carried out is beyond the present sanctioned staff at the Research Institute. Local Research Officers, working in collaboration with this Institute, are urgently required in all the larger Provinces. This has already been recognized but has not as yet been given effect to, except in Burma.

Botanical enquiries, relating to fungoid diseases, are also of importance and problems affecting the germination, nutrition, disease, and death of seedlings of all species have to be dealt with. The identification of trees and shrubs has also to be undertaken. Botany.

Botanical investigations not being of such obvious importance or direct utility as some other are liable to be neglected, which is not as it should be. For the present the sanctioned staff may perhaps suffice but an increase will no doubt be eventually required.

Forest Zoology is a young science in India, and the insect pests of Indian trees are only now beginning to be studied systematically. Until their life histories have been carefully worked out it is impossible to suggest measures of control. The damage done every year by wood-boring insects and by leaf-defoliators throughout the length and breadth of India undoubtedly runs into many lakhs of rupees. This form of damage can only be successfully dealt with by careful and patient observation. The work is, however, beyond the capabilities of the present staff. A second Assistant to the Zoologist is required, as well as a number of Field Assistants. The training and appointment of two of the latter have recently been sanctioned as a commencement, but more are required. Zoology.

Here again the problems in organic chemistry, connected with major and minor forest produce, are as numerous as they are varied and there is scope for much research work. Chemistry.

The post of Forest Chemist, which is at present in abeyance, should be filled as soon as a suitable officer is available. He would require at least two Assistants of the standing of gazetted officers. Chemical research work must always be centralized and there will be no place for local officers in this branch.

* (Not yet appointed.)

Economy.

This is a very large subject and one which will naturally appeal more directly to the Commission. It embraces a variety of different enquiries among which may be mentioned (1) the antiseptic treatment of timber, (2) seasoning of timber, (3) the preparation of Cellulose for pulp, (4) gums and resins, (5) fibres, (6) essential oils, (7) wood distillation products and others.

It is too much to expect one man to be an expert on all these and many other subjects and yet there is at present only a single Forest Economist.

It is true that the post of an Imperial Assistant is also sanctioned but this post is vacant owing to shortness of officers. At least two additional officers are required, who would specialize in the different branches of Forest Economy. There would then be three officers in charge of three parallel branches of Forest Economy, and they might be styled :—

(1) Wood Technologist ;
(2) Forest Specialist—Timber treatment ;
(3) Forest Specialist—Minor products.

(1) would include the study of the structure, technical properties, distribution, and uses of Indian woods,
(2) the seasoning and impregnation of timber,
(3) all minor forest produce, *e.g.*, fibres, flosses, gums, resins, essential oils, drugs, tanning materials, oil-seeds, etc.

Imperial Departments to aid industrial development.

Q. 64. I am strongly in favour of the formation of an Imperial Department of Chemistry.

Provincial Departments.

Q. 68. The employment of experts by Local Governments seems to be very necessary in order to give confidence to the public in cases where it is proposed to market some new form of produce which, it is believed, will be of considerable value for a specific purpose.

Other Forms of Government Action and Organization.

Forest Department.

Q. 105. The Forest Department in the past has devoted its energies to the following main objects :—

(1) The permanent reservation and demarcation of the Government Forest Estate.
(2) The policing and protection of the same from external injuries.
(3) The drawing up of schemes or working plans for the utilization of the interest on the forest capital on the most suitable silvicultural lines.
(4) The marketing of the produce.

In addition to the above, the Divisional Forest Officer has various other duties, and his time is fully occupied. Moreover, he has a scientific and technical training but little or no knowledge of commercial or business methods. It is not his fault. He is trained in science and then expected to be a member of a so-called *quasi*-commercial Department. I find no fault with his education. I think it is entirely suitable but I do not think he should be expected to run the commercial side of the Department without the assistance or advice of a commercial expert. It would, I think, be good if such a specialist or commercial expert were attached to each Chief Conservator or Conservator to give assistance in commercial development. In addition to the commercial side of the Department there is a crying need for Engineering Experts, able to tackle the many problems of exploitation which confront the Department on all sides.

Taking Burma as an example. There are vast areas of trackless forest full of literally hundreds of species of trees, which at present cannot be profitably exploited for want of facilities of export, and about which little is known. It is a potential gold mine which has only escaped being worked owing to the enormous profits to be got out of working teak. The time has come, however, when all these miscellaneous species should be worked out along with the teak, on systems of working involving concentration of work. In this way alone can the forest be made to yield the best and fullest return, and such concentration of working would, moreover, justify the construction of proper mechanical arrangements for export.

Reducing the cost of assembling raw products.

Q. 106. The first step to be taken is to introduce methods of treatment which involve concentration in fellings. The trend of the Working Plans' idea is in this direction, and it is difficult to estimate the enormous saving which will be involved thereby. Scattered fellings naturally mean increased cost of transport resulting in low prices offered for standing timber. This, together with improved methods of extraction, will effect large savings in the cost of exploiting forest produce.

Concentrating special kinds of trees in limited areas.

Q. 107. Many species of trees occur naturally in pure forests (gregarious), *e.g.*, the Sal (*Shorea robusta*), Pines, Firs, etc. Others, on the other hand, *e.g.*, the Teak, grow naturally in forests mixed with other species. Attempts to grow trees of the latter class as pure woods are fraught with danger and frequently lead to disaster owing to epidemics of

insect or fungoid attack. The study of mixed and pure crops falls within the province of the Silviculturist and is receiving due attention from him.

Q. 108. Export facilities in the shape of good roads and tramways are as a rule absent or inadequate. This is mainly owing to the fact that the forests are so vast in extent that it is practically impossible, for financial reasons, to maintain permanently a good system of roads. Deficiencies in forest transport.

Now that concentrated working is receiving greater attention it will be possible to develop the communications tapping each area under working *in turn*.

In this way road repairs will also be concentrated and it will be possible profitably to introduce tramways owing to the larger volume of material which will be exploited from a given area. This will result in a considerable economy in exploitation charges and, as a result, bigger profits.

In Burma, communications, except by water, are almost non-existent and the only means of getting timber from the forest to a floating channel is by draught elephants. Elephants are very expensive and very liable to disease, and in these days of mechanical transport and engineering devices they are an anachronism. The only excuse for their employment under present conditions is owing to the fact that teak, which is practically the only species of trees being worked out at present, occurs scattered through the forest.

With concentration of working, however, and the exploitation of miscellaneous species, the elephant will have to go, for the concentration of elephants into big camps involves great dangers of epidemic disease, especially of Anthrax. The development of forest export roads in Burma is, therefore, a necessity of the first order.

Supplementary Evidence.

Q. 1.—What is the basis of the assertion that more forest produce can be extracted at a profit with the help of engineering works, especially in the Himalayas, on the West Coast, and in Burma? Have any schemes been prepared or put into operation?—*A.* The value of timber trees in the Himalayas varies, *cæteris paribus*, inversely with the distance of the forest from a floating stream. The zones occupied by the main timber-yielding Conifers in the Himalayas are roughly as follows:—

(1)	Long-leafed pine	3,000′ to 6,000′ alt.
(2)	Blue pine } Deodar. }	6,000′ to 8,000′ alt.
(3)	Spruce fir } Silver fir }	7,000′ to 9,000′ alt.

Zones (1) and (2) have been worked at a good profit for over 20 years. The less valuable pine timber of Zone (1), on account of its lower altitude and consequent greater accessibility, gives a substantial net profit.

The intrinsically more valuable deodar and blue pine timber of Zone (2) costs more to exploit, owing to the forests being situated at a greater mean altitude.

The fir forests of Zone (3) have scarcely been touched as yet. In order to render the extraction of these timbers a profitable concern it will be necessary to reduce the cost of transport of the timber from the forest to the floating stream to a minimum. This can only be done by the introduction of one or more of the recognized methods of mechanical transport, *viz.*, sledge roads, tramways, wire ropeways, wet slides, and shoots. The selection of the best combination of the above in any given instance is an engineering problem requiring considerable technical skill, and a judicious selection may mean increased profits in working a forest amounting to lacs of rupees.

I have no experience of the forests of the West Coast and did not mention them in my original answers.

Many of the forests in Upper Burma cannot at present be worked at a profit (except for teak) owing to lack of communications. Roads, and probably in some instances light railways, are required before the large number of second, and third, rate timbers in this country can be profitably exploited.

Schemes have been prepared and have actually been in operation for many years for the exploitation of the more valuable deodar forests of the United Provinces. As instances I may quote the export works which were designed and utilized for the extraction of deodar timber from the (1) Deota, (2) Bamsu, and (3) Kulni valleys of the Chakrata forest division.

In No. 1 a sledge road and dry shoot were employed. In No. 2 a sledge road and wire ropeway (in 3 lengths).

In No. 3 a tramway, wire ropeway, and wte slide.

* By the use of these engineering works the timber (sleepers) was brought down for about 6 miles through a vertical height of some 3,000 feet and the cost of transport of metre-gauge sleepers was reduced from 1 anna per sleeper per mile (the rate on coolies' backs) to about $\frac{1}{5}$th of an anna per mile, resulting in a very substantial saving on 5 lacs of sleepers.

Q. 2.—What were the tests applied to bamboos to discover their suitability for paper pulp-making? How far was the hesitation of concessionaires before the war to work their

concessions due to doubt whether the cost of transport of raw material, manufacture, etc., would not be too great ; and would this hesitation have been overcome by a Government factory working on a small commercial scale ?—*A.* The tests carried out to discover the suitability of bamboos for paper pulp were as follows :—

(*i*) Laboratory tests carried out by Sindall in Burma in 1905 at the instigation of the Government of Burma.

(*ii*) Laboratory tests carried out by Mr. W. Raitt from 1905 onwards.

The results of both of the above tests have been published.

(*iii*) Following the above tests, which were not accepted by interested parties, as they had only been carried out on a laboratory scale, the Forest Research Institute arranged with the Titaghur Paper Mills to carry out tests on a large scale. Eighty tons of the bamboos were supplied free of cost and tests were carried out on a commercial basis, which proved not only the value of the bamboo for the manufacture of pulp, but also gave fair indications as to the cost of production.

(*iv*) Similar tests to the above have been recently carried out on the same lines in order to ascertain the merits of a digester especially designed for the treatment of bamboo.

The above tests have been sufficient to convince several well-known companies in India that bamboos are suitable for the manufacture of paper pulp.

The latter portion of question No. 2 refers to the hesitation of concessionaires before the war to work their concessions due to doubt as to the cost of extraction.

Doubt certainly existed in the minds of certain interested parties in Calcutta as to the cost of extraction, whereas two interested firms in Bombay had no doubts on the subject. What doubt existed in the minds of the Calcutta people before the war has recently been removed by one of the firms' representatives proceeding to Burma to carry out a personal inspection of the proposed leased area.

In the case of bamboos for pulp I very much doubt whether the erection of a small Government factory would have overcome the difficulties which arose in connection with the starting of this business. On the other hand, had a Government factory been in existence, it would have enabled us to carry out tests with other raw materials, such as elephant grasses.

Q. 3.—How far would the exhibition of large samples which could be tested by the public under commercial conditions improve the demand for the less known timbers ?—*A.* The exhibition of large samples of such timbers would be beneficial, though the establishment of small Government timber depôts at large centres might perhaps be a better solution to the problem.

Q. 4.—Is it not the case that the use of *Simul* for matches is rendered difficult owing to the objection taken to its dark colour, and was not this objection overlooked in the Forest Department bulletin on the subject ? How can a purely commercial difficulty of this sort be ascertained and estimated ?—*A.* The question of colour was no doubt one of the factors which militated against *Simul* for matches, but this was by no means the primary objection. The principal difficulty is that the stick is not strong enough, owing to the twisted nature of a large proportion of the timber. Moreover, *Simul* timber being open and loose-grained renders it impossible to cut a uniformly square stick, which results in an uneven match-head.'

The answer to the last portion of question No. 4 is " By the appointment of a Match Expert."

Q. 5.—Describe the qualifications, training, and duties of a Forest Commercial Officer and the reorganization of the Forest Commercial Service.—*A.* The outstanding qualifications which the Forest Commercial Officer should have are :—

(*i*) A good business training.

(*ii*) It would be preferable that the man should possess some knowledge of timber, though this is not absolutely necessary, as information on technical qualities of timber can be supplied to him, while he will soon pick up a commercial working knowledge of the timber trade.

The next point concerns training ; preferably the man should be recruited from the commercial community in India and should have had at least three years' experience as an Assistant in a business firm.

As regards the duties of a Forest Commercial Officer he should primarily be a liaison officer between the Forest Department and the commercial world.

As such his duty should be :—

(1) to deal with sales of timber and minor forest produce ;

(2) to introduce on to the market both timbers and minor forest products for which there is at present no sale ;

(3) to keep in touch with the markets for forest produce and issue statistics on the same ;

(4) to answer enquiries made by Government officials and private persons in connection with his work; and

(5) to supervise experiments carried out in his province in connection with forest products.

There should, in my opinion, be at least one such commercial officer attached to each Province, who should work under the general supervision and orders of the Chief Conservator or Conservator, as the case may be, and the Director of Industries should be kept in touch with the progress of his work.

I now wish to modify my original note under Question No. 57 in which I suggested that the Director of Industries should direct the work of the Commercial branch of the Forest Department. I think that this would not be such a suitable arrangement as the alternative now suggested.

Q. 6.—Can Government with advantage put down the movable tramways, etc., mentioned in your reply to Question No. 108, or should this be left to forest contractors, or in the case of more permanent railways to outside private agency?—*A.* The Forest Department, with or without the advice of the Forest Engineer, can quite well lay down a movable tramway, provided the motive power is by draught animals, and in the case of departmental working of the forest, the Department should certainly do this.

When through purchasers or contractors the procedure would be different in the case of short and long period leases. With a lease extending over at least five years the contractor could well afford to buy and lay down his own tram-line, whereas in the case of annual sales Government might perhaps purchase the line and rolling-stock and lease it annually to the purchaser, who would lay down the line to suit his requirements.

Q. 7.—How should the Forest Department be financed—as capital expenditure from loans, or out of revenue?—*A.* A forest property differs from any other estate, such as rubber or tea, in that it has been acquired with a large proportion of its maximum possible stock already existing, whereas the planter has to create his *ab initio*. In other words, the great majority of forests are in a position to produce, at least temporarily, a very handsome dividend without further expenditure being incurred on them from the moment they are acquired.

Now, since this capital has been found by Providence without the existing generation having provided one iota towards it, it is obviously unjust to the future generation that the present one should reap too largely where it has not sown. In other words, it is up to us to put back a fair proportion of the vast property we have been given free, in order to at least maintain its paying capacity for our successors, in place of handing it on to them in a damaged and depreciated condition.

So long as the Forest Department is generously provided with funds to allow of a proper development of its resources it seems to me that it is immaterial whether these funds are provided from revenue or from loans.

It is obvious, however, that in certain cases where forests have deteriorated through abuse, overfelling, or other causes fellings may have to be temporarily suspended for a number of years with the result that the revenue might for a number of years fall to *nil*, in which case funds for the reconstitution of the forest would have to be provided from outside.

Q. 8.—To what extent is the success of the turpentine industry due to assistance rendered by the Forest Research Institute?—*A.* The advice of the Chemical Adviser to this Institute has been sought by, and given to, the turpentine factories in the United Provinces and the Punjab on numerous occasions, and at least one important item in the system of distillation at present in force was adopted as a result of suggestions made by him.

Q. 9.—It is not necessary that the officers attached to the Economic Section should be in a position to test the products they have to deal with on a fairly large commercial scale? If so, how is this to be provided for?—*A.* It is essential that this Institute should be in a position to prepare large samples in order to confirm laboratory tests. At present, with few exceptions, we have to submit the raw material to manufacturers for testing; this system has many disadvantages. With the object of undertaking such work in this Institute proposals have been submitted to the Government of India for the extension of the buildings and workshops so as to include the following plant which will make it possible to prepare products on a semi-commercial scale:—

1. A tan extract plant of ½ ton capacity.
2. A destructive distillation plant of 4-6 cwt. capacity.
3. A pulp plant of 5-8 cwt. capacity.
4. A solvent extraction plant of a thousand pounds capacity.
5. Steam stills of various types, which we already have in stock.
6. A thirty-ton timber-testing machine.

Item Nos. 1 and 5 are already in India and the rest have been indented for and will, it is hoped, be supplied before long.

(*Witness did not give oral evidence.*)

WITNESS No. 475.

MR. J. A. PILGRIM, L.T.C., *Tannin Expert to the Government of India.*

WRITTEN EVIDENCE.

The available tanstuffs of India.

During the last year and eight months since my arrival in India I have had the opportunity of making several extended tours in different parts of the country including Burma; and in every district I have visited I have been struck with the large number of natural tanstuffs at hand. But as I am asked to write on *available tanstuffs* I think it will be wise to sub-classify the latter as follows:—

(I) Tanstuffs available for large areas of India.
(II) Tanstuffs available in various districts locally.
(III) Tanstuffs available for special uses.

Of these, classes (I) and (III) are necessarily more restricted than class (II) in that there are so many tanstuffs sufficiently abundant in a given district which are, however, from one cause or another, of insufficient value to stand freight charges to any great distance. But there are, on the other hand, a considerable number of tanstuffs which, owing to such factors as abundance, cheapness, strength, or special characteristics of the tannin-principle will justify their conveyance by the means available to centres of the tanning industry. The *Cassia auriculata* of the South, which finds such enormous application almost all over the Indian Peninsula, being often profitably conveyed very long distances by rail, realizes prices out of all proportion to its percentage of tannin for the simple reason that this tanstuff is so safe in operation that it is said to be "fool-proof". It is doubtful whether there is any other tanning material yielded by Nature which is so uniformly successful even in spite of carelessnesses which often obtain in its application. But India has a number of other tanstuffs possessing merits of their own and from which, in some cases, equally useful leathers can be made provided the tanner is educated in their use and exercises careful supervision of the tanning process. Some of these tanstuffs may be applied singly; others are better in more or less complex mixtures. Others, again, while not necessarily useful throughout the whole process of tanning, may, nevertheless, be invaluable for special properties exercised at certain points. Such are the common Myrabolams used so much at the finish of the process with Turwad and similar tannages, as a "bleaching" agent; also 'Sumac' and other agents used in the retanning of half-tanned hides. I am aware that there are tanners who use Myrabolams in admixture with Babul in the earlier stages of the tanning process, but their use would appear to me then general rather than special. In any case they constitute a tanstuff widely in demand all over India. The Myrabolam tree (*Terminalia chebula*), though widely distributed, is not found everywhere; and it pays to send consignments long distances by rail in India—not to mention the enormous export to Europe in the peace times of the past. There are even districts growing their own Myrabolams who find that it pays to import by rail "nuts" of known high grade, such, *e.g.*, as Jubbulpores and Bimlis, for best work, rather than use the probably inflated "nut" which is commonest near at hand. Myrabolams, then, are to be regarded along with Turwad as universal tanstuffs. To them I would add the Babul (*Acacia arabica*) bark because of its wide, though scarcely general, distribution and of the enormous quantities of it consumed annually in Northern India. I am aware that in Sind this tree grows almost pure, but I have been struck with its occurrence here and there in most parts of India that I have visited; and more particularly in the extreme South I saw very many thick groves of this species, especially in the neighbourhood of tanks and shallow pieces of water; and the fact that at present it finds practically no application in Southern Madras as a tanstuff should not be taken as indicating that it never could be so used.

To the above three tanstuffs I would add the following as potential tanstuffs for more or less universal application:—*Anogeissus latifolia* leaves; *Phyllanthus emblica* twig bark; *Carissa spinarum* leaves; *Zizyphus xylopyrus* (Gothar) fruit; *Cassia fistula* bark; *Kahua* (*Terminalia arjuna*) bark; various Mangroves; Sal; Divi divi; *Cæsalpinia digyna* pods; and *Acacia leucophlæa.*

Tanstuffs available for large areas of India.

(1) *Cassia auriculata*—so well known and widely distributed as to need no further description here. My best analysis showed 21 per cent, but I understand that analyses sometimes run as high as 24 per cent. The proportion of non-Tannin to Tannin is low; *viz.*, $\frac{\text{"N. T."}}{T} = \frac{1}{2}\frac{0}{1}$, and the tannage, though of the Catechol class, is soft and mellow, as is well known.

It may be well to add here that I do not regard the fact of an excess of non-Tannin over Tannin $\left(\frac{N.T.}{T} > 1\right)$, as *necessarily* tending to the condemnation of the tanstuff. I mention later in this paper, under "Carissa spinarum" a non-Tannin which is distinctly beneficial, but

in cases where the non-Tannin possesses no particular merit of its own, the tanstuff with $\frac{\text{non-Tannin}}{\text{Tannin}} < 1$ will naturally be the better; and for the purposes of manufacture of Extract, this is specially the case.

(2) (*a*) *Babul* (*Acacia arabica*) *bark*—as well known in the North as *Cassia auriculata* is in the South, but by no means so easy to apply with a certainty of good results except in the hands of an experienced tanner. I learn from Captain Guthrie, Deputy Controller for Hides, Madras, who has done much work on Babul, that its average tannin content shown by a large number of his analyses was 12·4 per cent with 8·6 per cent of soluble "non-Tannin."

(*b*) *Babul pods.*—I believe that Mr. Puran Singh, the Forest Chemist, has done considerable work on this pod, but I am not aware with what final results. I append my analyses of (*i*) pods, dried green; with seeds, as far as possible, removed afterwards; and (*ii*) ripe husks without seeds picked up off the ground.

	(*i*)	(*ii*)
Tannin	16·86	19·76
Soluble non-Tannin	26·43	27·09
Insoluble matter	56·71	53·15
	100·00	100·00
$\frac{\text{non-Tannin}}{\text{Tannin}} =$	1·6 / 1 and	1·4 / 1

The colour measurement of the filtered infusion of the ripe husks showed — calculated to 5 Grams per Litre Tannin strength — Red units 7; and Yellow units 26.

Owing to the very wide distribution of Babul, as already mentioned, further work from the tanning standpoint must be undertaken on these pods. The difficulty so far has been the tendency of the infusion to ferment, but this was not apparent in husks without seeds, which probably constitute a potential general tanstuff of the future. The matter will be gone into more fully from the practical standpoint, at Maihar, when time permits.

(3) *Myrabolams.*—Myrabolams of good quality may vary between 30 and 45 per cent of tannin, but by crushing and removal of the stones of the fruit, the residual "flesh" constituting two-thirds of its weight has an average of 50 per cent tannin, and Esociet has introduced this crushed product—which packs very close into bags—to the European market—before the war—with success. The kernels, I am told, only contain some 6 per cent of tannin. The nuts crushed have been first carefully picked and cleaned at the collecting centre, hence the fine product obtained.

(4) *Anogeissus Latifolia leaves* (Dhawa).—Much has been already written with reference to this tanstuff pioneered by the Esociet, Maihar. Its wide distribution almost throughout India has been pointed out, and a number of analyses also have been published showing that its leaves may vary at least from 15 per cent to 50 per cent in tannin-content according to their age, the young red leaves and shoots being the richest. These would appear to be more abundant and to retain their red colour and high percentage of tannin until of larger size in Southern India than in the North; and according to the Conservator of Forests, Southern Circle, Madras, P. M. Lushington, Esq., I.F.S., in the Palni hills (Kodaikanal Ghat) new 'flushes' have been observed to recur almost every month. An analysis of Mr. Lushington's 'Rosy Sumac', which is prepared from these red leaves, showed 49·21 per cent of tannin with 14·02 per cent of soluble 'non-tannins' on *dry*. The infusion was almost colourless (very faint tinge of yellow). The experience of the Esociet Tannin Research Factory is that the *nogeissus latifolia* leaves (especially the fine quality which is referred to as 'Sumac') have a bleaching action on almost any other more highly coloured tanstuff with which they are admixed; and this tanstuff is, therefore, extremely valuable in mixture tannages although by itself it produces a rather hard leather with a greenish tinge. Its tannin belongs to the Pyrogallol class and shows almost identically the same reactions as Sicilian 'Sumac' prepared from *Rhus coriaria*. Further, the Dhawa 'Sumac' (*i.e.*, ground leaves) resemble Sicilian 'Sumac' in smell and in appearance, unless a very large proportion of the rich red leaves are present as in Mr. Lushington's Rosy 'Sumac', which has a reddish tinge.

(5) *Phyllanthus Emblica.*—The twig bark of this tree has been proved at Maihar to be a most valuable ingredient in various mixture tannages worked out there although the mature bark was low in tannin (about 10 per cent), and not useful in leather, making.

An analysis of this twig work is as follows—result calculated to *dry*:—

Tannin	21·60
Soluble non-Tannin	17·18
Insoluble matter	61·22
	100·00
$\frac{\text{Non-Tannin}}{\text{Tannin}} =$	1 / 1·26

* The ratio of non-Tannins to Tannin is at various places in this paper expressed as "$\frac{\text{N. T.}}{\text{T.}}$".

The other two samples showed respectively 19 per cent and 20 per cent of tannin with, in each case, only about 10 per cent of soluble non-tannins. A very recent analysis by Lead (Pb.) method done in the Research Factory in the comparison of *Phyllanthus emblica* bole bark and twig bark gives the further confirmation of 12 per cent tannin in the former and 25 per cent in the latter.

The tannin of *Phyllanthus emblica* penetrates well and gives both weight and plumpness to the leather. It is found in sufficient quantity within reach of most parts of India, and though never exactly gregarious, the trees are often quite near neighbours in an average jungle.

The fruit of this tree has been very long known as a tanning material under the name of "Emblic" Myrabolams, which have been exported to Europe and used there to some extent on a commercial scale. Great attention is at present being paid at Maihar to the collection of this fruit which analyses over 30 per cent of tannin when taken green. It is too early to say at present under what conditions of collection it will yield good leathers, but this matter will be elucidated by the Research Factory at Maihar. At least the tanstuff seems promising on our present results, although in the past it has only yielded a very poor grade of leather as a "self-tan".

I was informed by a Village Headman when in the Belgaum Division that during a dearth of common Myrabolams several years ago the local tanners turned to the *leaves*, and not to the *fruit*, of the *Phyllanthus emblica* as a substitute, with fair results according to their own statement. An analysis of mine of these leaves was as follows — calculated to *dry*:—

Tannin	27·85
Soluble non-Tannin	19·12
Insoluble matter	53·03
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1{\cdot}5}$$

Preliminary practical tests at Maihar have not so far been encouraging; but the matter is not yet regarded as determined and further work on the leaves is being taken up.

(6) *Carissa Spinarum leaves* (Karundah)—widely distributed in many parts of India, often on dry slopes at the base of hills; averages about 10 per cent of tannin; has shown itself a valuable ingredient in mixture tannages on account of its plumping properties. The proportion of $\frac{\text{non-Tannin}}{\text{Tannin}}$ is about $\frac{2{\cdot}5}{1}$, but we have reached the conclusion that here the non-tannin is of peculiar value for its plumping action on the leather.

(7) *Zizyphus Xylopyrus* (*Gothar*) *fruit.*—A number of analyses of Gothar fruit without stones has been carried out with varying results up to over 20 per cent of tannin in a ripe sample. A single estimation of a sample from the East Coast showed as much as 34 per cent by Lead (Pb.) method, but this has not been confirmed in any other samples done by either Hide Powder or by Lead (Pb.) method. The matter is still being investigated with repeated analyses for the reason that the separation of stones from flesh is expensive; and it is important to note just at what time of the year the fruit is richest in tannin. Mr. Fraymouth has recently discovered an entirely new application of Gothar fruit in the tannery. I may mention that this fruit yields a very gummy infusion and Mr. Fraymouth has found that strong Gothar liquors, which are both gummy and acid, have a remarkable plumping action on hides suspended in them at the outset of tanning. These liquors further impart hardly any colour at all to the leather, but the great point in the discovery is that the gum itself would appear to be very largely absorbed into the hide substance and that after a suspension of, say, 7 days' time, it may, in the main, be removed by washing, when it leaves the hides in such an "open" condition that on being moved to stronger tannin liquors they absorb tannin with remarkable evenness and rapidity and apparently without any bad effects at all, as 'half-tanned' leather which has been so treated comes out soft, mellow, pliable, and with a smoothness of grain hitherto unattained at the end of the tanning process. It is interesting that in the Leather Trades Review dated 9th January 1918, just to hand here, Dr. Andrew Turnbull and Mr. T. B. Carmichael have taken out a patent for the use of a starch jelly in combination with tanning materials where, they claim, that a very strong tannin solution may be employed without any "drawing" of the grain. We, here, have long been aware of the large amount of the gum contained in Gothar fruit, which has compelled me to use special treatment in its analysis. But it is quite independently of the discoveries embodied in the above-mentioned patent that Mr. Fraymouth has discovered that this very gummy thick Gothar liquor has this remarkable effect, which he has already turned to practical account in the routine of the Maihar Tannery where all hides receive this preliminary treatment with the Gothar liquors to the very great benefit of the ultimate leather. The Gothar tree is very widely distributed.

(8) *Cassia Fistula* (*Konai*)—largely used in the Madras Presidency as a diluent for the *Cassia auriculata*. I cannot speak of it as yet from practical experience, but it is reputed to contain from 9 to 12 per cent of tannin.

(9) *Terminalia Arjuna*—very largely found along the banks of water-courses in most parts of India. By itself it yields a somewhat harsh leather, but it is very valuable for sole leather tanning. Mr. Fraymouth's experience over a number of years both in Rewah and at Maihar is that the bark averages about 22 per cent tannin. The outer bark may be stripped from the tree and renews itself within a year provided the cambium is not disturbed. This tanstuff was largely used successfully by Mr. Fraymouth in the Rewah State Tannery from 1911 onwards for leathers produced there, and has been supplied regularly for three years to two tanneries at Cawnpore with equally good results. Mr. Fraymouth has a simple and ingenious cutter for flicking off the outer layers of the bark, without damage to the cambium.

(10) *Mangroves.*—These, though not of very general distribution in large quantities in the Indian Peninsula, cover an enormous area in the Sunderbans and all along the coast of Burma from Arakan to Victoria Point, including very many of the islands of the Mergui Archipelago. They are also abundant in the Andaman Islands and were so, at one time, on the South-West Coast of the Indian Peninsula, but now they have been very largely cut out to make room for the cultivation of cocoanuts and paddy. They may, however, be regarded as available for large areas of Burma and North-Eastern India.

(*a*) The commonest of all in Burma is *Rhizophora Mucronata* which is known as the "common mangrove". The following is the analysis of a sample collected at Killai, South Arcot District (Madras)—calculated to *dry* :—

Tannin	22·17
Soluble non-Tannin	16·76
Insoluble matter	61·07
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1{\cdot}3}$$

Other samples from Burma have shown variations from about 19 to 29 per cent according to Hooper. I regard my sample as rather low. The Agricultural Ledger of 1902, No. 1, states on page 35 that the tree *Rhizophora mucronata* is called "pyu-bin" by the Burmans and "Bakan" by the Malays. But the latter is evidently a misprint for "Bakau". My experience, however, is that the *Rhizophora mucronata* is not "Bakau" at all, but "Buis" or "Bewis", of which I had some experience in Borneo. "Bakau" is known in Burmese as "Payon" (pronounced Pé Yôn) which, according to the District Forest Officer, South Tenasserim, has not yet been botanically classified. I have several years' experience of the use of the bark of this tree for the preparation of Tannin Extracts in Borneo. It is also very abundant in Southern Burma.

(*b*) *Rhizophora conjugata* is often associated with *R. mucronata* and has similar properties.

(*c*) There are also two or three species of *Bruguiera* yielding similar barks. I append an analysis of *Bruguiera caryophylloides* from the Madras East Coast, the figures of which are as follows — calculated to *dry* :—

Tannin	18·41
Soluble non-Tannin	10·49
Insoluble matter	71·10
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1{\cdot}75}$$

The three foregoing "Mangroves" could, in my opinion, be mixed together even in varying proportions without making very much difference to an extract, and the same probably applies to direct tannage.

(*d*) *Ceriops roxburghiana and candolleana.*—These trees are abundant in the Sunderbans as well as in Burma. A sample from the former district, *vid* Calcutta, taken from a bulk consignment of *Ceriops roxburghiana* supplied to a tannery, gave me the following figures—calculated to *dry* :—

Tannin	27·73
Soluble non-Tannin	8·15
Insoluble matter	64·12
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{3{\cdot}4}$$

while a sample of *C. candolleana* I brought from South Arcot (Madras) only showed 22·6 per cent of tannin with 10·72 per cent of soluble non-tannins. But my own experience has shown me that there is a great variation in even the identical species of Mangroves, so that

for either the *C. Roxburghiana* or *candolleana*, I could not take these as typical figures. The two species are so alike that they were always mixed up in collection by the natives of Borneo and the only distinction they made between them was to call one big ("bāsār") and the other little (" ketchil"). Both went by the name of "Tāngah". I have myself analysed samples of these barks showing as much as 40 per cent tannin. I personally have always regarded these Ceriops as more suited for the manufacture of a dye-extract of the character of *Acacia catechu* "Cutch" than for use in the tannery. But the Esociet Tannin Research Factory has been able not only to use *Goran* (*Ceriops roxburghiana*) bark in mixtures with good results, but by the system of contact tannage applied there they have produced a half-tanned leather of good colour and quality, where I have hitherto seen nothing but hard and harsh leather from this Mangrove alone. The "Goran" (*Ceriops roxburghiana*) exists in the Sundarbans in such quantity that it sells in Calcutta at only about annas six per maund; and it is equally abundant in Burma, Malaya, and many other tropical countries so that it might well form an ingredient of mixture tannages at least in those countries, if not even further afield. There are many other Mangroves which yield most promising analyses, but have yet to be tried on the practical scale. Amongst them I would mention :—

(*d*) *Two species of Carapa—Moluccensis and obovata.*—A sample of the bark of the last named gave me the remarkable result in Borneo, of over 60 per cent. of tannin. It is found in most parts of the upper Mangrove stretches, but it is scarcely gregarious, and the Chief Conservator of Forests in Burma has made arrangements for experiments, at my request, regarding its propagation.

(*e*) *The Heritiera fomes*—a fine timber tree—, has beenreported as a tanstuff yielding a leather of good colour, but a sample received from Calcutta was most disappointing in showing only 7 per cent of tannin.

My own feeling with regard to Mangroves is that as a class they almost all present tanning possibilities, more especially for use in mixture tannages. I believe that in most districts the right *dry-land* tanstuff or tanstuffs for admixture with them, to improve the colour and the quality of the leather, will be forthcoming, and I would much like to take up this work in Burma at some time if the opportunity presents itself.

It may perhaps interest the Commission to know that an area around Mergui, South Burma, of some thirty miles showed much smaller Mangroves than in other parts I have visited, for the reason that prior to the war all the larger trees had been cut out for export of the bark to Germany, which suggests that the Germans must have discovered the profitable application of these barks.

(11) *Sal* (*Shorea robusta*).—The bark of this tree varies very much in tannin and has a high colour. But the Maihar Research Factory has prepared leathers of beautiful pale colour with mixtures in which it constituted up to one-third. The best leather was obtained with one-third each of *Gothar* (*Zizyphus xylopyrus*) fruit, *Carissa spinarum* (*Karundah*) leaves, and the Sal bark. I have analysed a number of samples of this bark which vary from 5 to 9 per cent tannin-content, and but for the enormous distribution of the Sal, especially in Northern India, it would hardly come into consideration as a tanstuff. It is because so much Sal timber is felled by the Forest Department, the bark being simply a waste product, that on account of its cheapness it has found a limited use in tanneries up to now, and might, in time, to come, find a larger application. Mr. W. A. Fraymouth, F.C.S., the Director of the Esociet Tannin Research Factory, has devised and patented a method of concentration of tanstuffs by separation of the bark into fibre and a powder "concentrate", and I have found that in some cases the tannin strength of the powder thus obtained has been double that of the original bark. I may mention that the young leaves of Sal have analysed nearly 22·84 per cent of tannin by Chromed Hide Powder. An analysis of another sample carried out by Mr. S. P. Chowdry by Lead (Pb.) method showed 20·5 per cent of tannin. The young leaves, therefore, hold out a promise as a tanstuff of the future.

(12) *Caesalpinia Coriaria—the common Divi divi.*—Hooper states in the Agricultural Ledger of 1902, No. 1, that the Indian *Divi divi*, first introduced into this country from America, had been found by Professor Dunstan to give an average of about 30 per cent of tannin; while the American product may contain from 30 to 50 per cent. An analysis of mine, from a bulk, two maunds, received from Madras—showed calculated to *dry* bark :—

Tannin	44·52
Soluble non-Tannin	23·57
Insoluble matter	31·91
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1\cdot9}$$

But, in this case, I had removed the useless seeds before analysis. *Divi divi* is cultivated in many parts of India. It is used mainly for heavy leather tannage and I found it was applied pretty largely at the Chrome Leather Co.'s Tannery at Pallavaram (Madras), which firm do not turn out half-tanned, but finished, leather. *Divi divi* is said to be useful for rapid drum tannages of light leathers, and in this case it gives a good colour. But in the heavy tannage it is apt to develop a dark colour the formation of which—Proctor indicates—may, to some extent, be prevented by the use of an antiseptic.

(13) *Caesalpinia Digyna.*—Pods of this (seeds removed) are reported to contain between 50 and 60 per cent of tannin, and this should be practically investigated in Bengal, Assam, and throughout Burma, where it is plentiful, though with its high percentage of tannin it should have prospects of universal application.

(14) *Acacia Leucophlœa.*—Distribution very general; gives a dark-coloured tan with a violet tinge which has been objected to. It has been proved at Maihar to be capable of yielding a good coloured leather by 'Porridge' tanning and might probably, in due time, find a more extended application. I am aware of its having been used to a limited extent by tanners in Northern India.

II.—Tanstuffs available in various districts locally.

(1) *Xylia dolabriformis.*—North and Central Kanara (Bombay), South Kanara (Madras), and Burma.—Is abundant both above and below the Ghats in Central and North Kanara and, I am told, grows almost pure on the laterite hills in South Kanara (Madras Presidency). Mr. G. H. Butterworth, I.F.S., Divisional Forest Officer for the Central Division, Kanara, computed that in three of his Forest Compartments it constitutes respectively 26, 28, and 30 per cent of the timber, and the trees sometimes run up to five feet in girth. Mr. G. Dodgson, Divisional Forest Officer, North Kanara, instanced ten of his compartments in which the average percentage of the tree was 24. He stated that the timber is not used there, and the wood can only be disposed of as fuel to the Railway Company. But if the tree were cut primarily with regard to the tanner and the extract manufacturer—the latter using the wood which produces a valuable extract—I take it that there would be no objection on the part of the Forest Department who seem, in this part of the world, to find no other use for the wood, whereas throughout Burma, and in South Kanara under the Madras Government, the timber is highly valued and the bark and saw-dust would only be available as a waste product from fellings. Mr. P. M. Lushington, I.F.S., Conservator of Forests, Southern Circle, Madras, estimates that of the bark some 1,200 tons would be available from fellings in South Kanara. But as many trees of the species are to be cut out this year at Kottiyur by Mr. A. W. Lushington there is little doubt that much larger quantities of bark would soon be available if wanted. I have an analysis of a Burma sample of the bark which shows the following figures—calculated to *dry*:—

Tannin	14·45
Soluble non-Tannin	17·05
Insoluble matter	68·50
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1\text{-}2}{1}$$

My latest information is, however, that there is some slight difference between the Burma species and the Indian. In Burma the whole of the Railway system is laid on sleepers of the *Xylia dolabriformis*, and there should be an enormous quantity of waste bark and also saw-dust available in that Province. The wood is not very rich in tannin, but contains a high proportion of tannin to non-tanninan—important point in extract manufacture—and is reported to yield an extract very similar to that of the South American Quebracho wood.

(2) *Terminalia belerica.*—I learnt during my visit to the Belgaum Division that this was very common in Central and Eastern Kanara, but it is more or less prevalent in most parts of India, including Burma. My own work on this tanstuff indicates that the twig bark shows 10 per cent tannin on *dry*, with 6 per cent of non-tannin, whereas the mature bark shows 7 per cent of tannin and 12·75 per cent of non-tannin. The colour is also distinctly better in the case of the twig bark and I should not regard the mature bark as worth much consideration. In the meantime, we keep the twig bark in mind for further experiments when time permits, and the fruit is also listed for investigation.

(3) *Cassia marginata.*—This tree is abundant in Southern Madras. My attention was called to it by Mr. Lushington, and we subsequently found that it was actually in use in a large tannery in Trichinopoly where it was admixed with *Cassia fistula*, the mixture being used as a "diluent" for Turwad. The Manager of the Tannery seemed hardly to distinguish between the two barks; they have similar names in Tamil, the *Cassia fistula* being called 'Konai' and the *Cassia marginata*, 'Sarai Konai'. It occurs to me, therefore, that possibly the same confusion may exist elsewhere in Madras tanneries. The tannin of *C. marginata* lies mainly in the middle part of the bark. In my rough tests referred to in my Madras Report I estimated its proportion at under 10 per cent and I now find that Hooper found some 6 per cent in the sample he analysed. This tanstuff would, therefore, scarcely be worthy of mention except for the fact that it is in actual use in Madras.

(4) *Wattles.*—Wattles of the Nilgiris and the Palni Hills are of three species, *viz.*, *Acacia decurrens*, *Acacia melanoxylon*, and *Acacia dealbata*. The bark of these trees might even now find a limited use in the tanneries, but there are no great quantities as yet available, probably not more than 200 tons a month, of all the three kinds put together. If a greater

demand for the Wattle timber be created more bark would naturally be annually available, but without extensive planting it will be a long time before the Wattle bark could be regarded as a generally valuable tanstuff in Madras. I understand that two gentlemen have applied for large concessions in the Nilgiris for the cultivation of the Wattle—*Acacia decurrens*—the species yielding the richest tan bark. But I think this is mainly with a view to the manufacture of extract in the future, the Wattle extract being much appreciated in England. The experiments carried out at Maihar indicated rather harsh tannage even in mixture, but the Wattle barks, if available in sufficient quantity, would, doubtless, prove very useful in the future in sole leather tannage; and so I feel they may rightly be mentioned here as *potential* tanstuffs. *Acacia decurrens* bark has over 30 per cent, and has been reported with over 40 per cent tannin.

The other two species are less rich, but a bulk of the mixed barks of all three species has been supplied to the Maihar Research Factory from Mr. Richmond, I.F.S., District Forest Officer, Nilgiris, at the request of Mr. Fraymouth, and will shortly be reported on. Mr. Fraymouth's feeling is that there might now be sufficient of the barks used mixed, for use in local tanneries, while there would not be any really large quantity unless the supply is increased by cultivation, which would naturally be of the best species.

(5) *Rhus mysorensis.*—I examined samples of the twig bark and leaves received at Maihar by the courtesy of Mr. Lushington, the analyses being as follows—calculated to *dry* :—

		Twig bark.	Leaves.
Tannin		18·52	13·04
Soluble non-Tannin		15·44	14·08
Insoluble matter		66·04	72·88
		100·00	100·00
$\frac{\text{Non-Tannin}}{\text{Tannin}}$	=	$\frac{1}{1{\cdot}2}$;	= $\frac{1{\cdot}1}{1}$
Colour analysis calculated to Standard Tannin strength of 5 Grams per Litre	Red	3	3·5
	Yellow	6	8·7

The twig bark particularly is promising, and both bark and leaves are remarkably free from colour. This tanstuff ought to be fully investigated practically at the Madras Leather Trades School as it is of particular interest in Southern India.

(6) *Anacardium occidentale* :—(Cashew nut Tree). This tree, although originally an importation from South America, is cultivated very largely in Madras. My analysis of the bark—sample received from the Director of Industries, Madras—was as follows—calculated to *dry* :—

Tannin	9·43
Soluble non-Tannin	9·40
Insoluble matter	81·17
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1}$$

The tannin appears to be of the Pyrogallol class. The inner bark seems to contain a red dye.

(7) *Phyllanthus Polyphyllus.*—A sample of the twig bark received from Mr. Lushington showed the following analysis— calculated to *dry* :—

Tannin	16·51
Soluble non-Tannin	9·60
Insoluble matter	73·89
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1{\cdot}7}$$

Mr. Lushington suggested that, as *Phyllanthus polyphyllus* was plentiful in Madras, it might be used along with, or in place of, *Phyllanthus emblica* twig bark, and though on this result it shows itself somewhat inferior in tannin to the latter, its use in this way would appear practicable.

The following is a list of other trees in the Madras Presidency which have given good indications on rough tests, but on which I have had no time as yet to work further :—

Name of Species.	Particulars of Tannin.	Where available.	Remarks.
(8) Diospyros embryopteris "Panichinga"—mature bark.	Good indication of pyrogallol tan.	.....	.....
(9) Grewia tiliæfolia—red leaves	Considerable pyrogallol tan.	In South Coimbatore, Tinnevelly, and Palni Hills.	The tree is stated to coppice freely and grow well from seed.
(10) Odina wodier bark and leaves.	Fairly rich in catechol tan.	.....	.....
(11) Thespacia populnea bark	Considerable indication of pyrogallol tan.	.....	.....
(12) Cocos nucifera ; the well-known cocoanut fibre.	Good indication of considerable catechol tannin.	.....	Samples asked for when in Madras for further investigation of this not received.
(13) Barringtonia racemosa leaves	Considerable indication of pyrogallol tan and yields a colourless infusion which might be valuable for white leather.	Found growing on river banks and edge of creeks.	.....

On the 25th January I received a letter from Mr. G. A. Baker, the owner of large Estates,—including an area of uncut Mangrove swamp—at Komarom Kottayam, Travancore, and this letter informed me that he was despatching to Maihar on the 18th January a number of Travancore tanning samples, including Cocoanut fibre and samples of many of the reputed tanstuffs named in the foregoing list ; also certain Mangroves—for investigation of their properties for general information. These samples will probably occupy about a month in transit to Maihar.

(14) *Anogeissus acuminata.*—Very serious attention should be paid to this tree in Burma. The leaves and bark appear fairly rich in tannin and, if the former possess a similar bleaching property to the *Anogeissus latifolia* of India, they should be very valuable in admixture with various more or less highly coloured Mangroves. My analysis of the mature bark is as follows—calculated to *dry* :—

Tannin	14·36
Soluble non-Tannin	5·79
Insoluble matter	79·85
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{2{\cdot}5}$$

The young bark is less rich in tannin only, showing 10 per cent with 8 per cent of soluble non-tannins. The low value of $\frac{\text{non-Tannin}}{\text{Tannin}}$ in this bark is a very good feature. The colour of the infusion is very similar to that of French Chestnut Extract. I have as yet no analysis of the leaves.

Oaks.—I recently had an opportunity of doing some preliminary work on the natural tanstuffs of the Darjeeling District, more particularly four species of Oak and one species of Chestnut, common in that locality.

(15) *Quercus pachyphylla.*—Yields, with annual regularity, an acorn enclosed in a very large cup, which cup will probably be of use as a "Valonea", though much below the Turkish Valonea in tannin content. The following are the figures of my analysis—calculated to *dry* :—

Tannin	16·11
Soluble non-Tannin	13·00
Insoluble matter	70·89
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1{\cdot}2}$$

Colour analysis calculated to standard tannin strength : Red, 20·5 ; Yellow, 91.

The acorn itself is of practically no value. The mature bark has the following analysis —calculated to *dry* :—

Tannin	12·24
Soluble non-Tannin	10·75
Insoluble matter	77·01
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1{\cdot}1}$$

Colour analysis calculated to standard strength :—

Red, 11 ; Yellow, 40.

Proctor gives the average tannin content of best English Oak bark at 12 to 14 per cent of tannin matter. This bark, therefore, is practically equal in tannin to English Oak ; and it should be possible to turn it to very useful account in a hill tannery.

(16) Another hill Oak ; abundant near Darjeeling, the *Quercus lineata* has a much lower analysis, the figures for the mature bark being as follows calculated to *dry* :—

Tannin	9·69
Soluble non-tannins	11·73
Insoluble matter	78·58
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1{\cdot}2}{1}$$

Standard colour analysis :—Red, 11·5 ; Yellow, 45·5.

(17) *Chestnuts.*—A hill chestnut giving a good analysis is the *Castanopsis hystrix*. The figures are as follows calculated to *dry* :—

Tannin	13·00
Soluble non-Tannin	11·81
Insoluble matter	75·19
	100·00

$$\frac{\text{Non-Tannin}}{\text{Tannin}} = \frac{1}{1{\cdot}1}$$

Standard colour analysis :—Red, 13·5 ; Yellow, 47·5. In smell and colour it closely resembles the English Chestnut *Wood* Extract. We have requested Mr. J. L. Baker, I.F.S., Deputy Conservator of Forests, Darjeeling Division, to send us a bulk sample of the foregoing for practical tests at Maihar ; not necessarily with a view to the utilization of such tanstuffs except in tanneries near to where the trees grow. I have still to examine (18 and 19) two other species of Himalayan Oak—*Quercus lamellosa* and *Quercus fenestrata**—which gave very good preliminary indications, and I may also further mention the following species, the first rough tests of which have shown that further investigation on the practical scale will be justified :—

(20) *Alnus nepalensis* (*the Himalayan alder*) good indications in bark.

(21) *Himalayan Maple* (*Acer cambellii*) mature bark indicates Catechol tan in fair quantity.

(22) *Rhus* (related to Sicilian Sumac).

(*a*) *acuminata* :—Leaves, twig bark, and mature bark—all give good indications of Pyrogallol tan.

(*b*) *R. semialata* :—Bark of this gives good indications.

(23) and (24). Further, the *Laurel* (*Machillus*) and the "Pipli" (*Bucklandia populnea* indicate Catechol tannin in fair quantity.

N. B.—The classification into Catechol or Pyrogallol is so far only tentative and has not yet been confirmed.

III.—Tanstuffs available for special purposes.

(*a*) Extracts.—Those tanning materials having the lowest proportion of $\frac{\text{N. T.}}{\text{T}}$ are obviously the ones which, *cæteris paribus*, yield the best extracts. It sometimes happens that the ratio $\frac{\text{N. T.}}{\text{T}}$ varies very greatly according to the age of the tanstuff, for instance, in old leaves of *Anogeissus latifolia*, the non-tannin is sometimes as high as, or higher than, the tannin ; whereas, in a sample of picked young leaves, the tannin may be 3½ times as high as the non-tannin. It may sometimes pay to prepare an extract from a tanstuff in which $\frac{\text{N. T.}}{\text{T}} > 1$, provided that tanstuff is either very cheap, or a waste product, or its tannin principle has some particularly valuable characteristic. For instance, a sample of tannin extract has been prepared on the experimental scale in the Government Experimental Tannin Solidification Plant at Maihar from purely waste products produced during

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Note with reference to Himalayan Oaks of the Darjeeling District.

Mr. J. L. Baker, I. F. S., Darjeeling, already referred to, has given me particulars of the number of trees of *Quercus lineata*, *Quercus lamellosa*, *Quercus pachyphylla* and *Castanopsis hystrix* ; and I see that in fifteen forest blocks where the trees of over 1′ 6″ in girth have been counted there are 24,710 trees of *Quercus lineata* ; 24,663 trees of *Quercus lamellosa* ; and 29,742 trees divided between Quercus *pachyphylla and Castanopsis hytrix*. The reason that the latter two have been counted together is that they bear the same name in the *Pahari* dialect spoken locally. It is, however, easy to distinguish between them as the *Quercus pachyphylla* only grows above 7,000 ft., whilst the *Castanopsis hystrix* grows only below this level. Speaking roughly, the two trees constitute about half and half in the 29,742. There are another 18 blocks equally rich in fine timber of the same class which are yet to be counted ; so I feel that it will be realized that there is abundance of raw material to work upon in the Darjeeling Division.

* My analysis of this, since completed, shows Tannin = 15·85 per cent with soluble non-tannins 8·44 per cent. ; remarkable figures for an Oak bark.

The standard colour measurement was—Red 4 ; Yellow 7 units.

the handling of Myrabolams (as mentioned on page 5), such as kernels of the "nuts" dust formed in crushing the latter, etc. This extract has the following analysis :—

Tannin absorbed by chromed hide powder	38·70
Soluble non-Tannins	42·30
Insoluble matter	5·25
Moisture	13·75
	100·00

Colour analysis: Red, 4; Yellow, 25·8.

For comparison with raw tanstuffs I may state that this percentage of tannin will be equal to 45 per cent on an absolutey dry extract; and with such percentage an extract should come in good value, in view of the practically negligible cost of the raw material from which it is prepared. But as an example of a highly suitable tanstuff for the manufacture of the extract I may quote the *Hopea parviflora,* the mature bark of which shows 21·71 per cent. of tannin to 4·69 per cent. of non-tannin. $\frac{\text{N. T.}}{\text{T}} = \frac{1}{4{\cdot}6}$. It may, further, be pointed out that in some instances the tanstuff containing only a very low percentage of tannin may come into account for Extract manufacture provided there is a proportionately lower percentage of non-tannin. European Oak-wood extract from *Quercus robur* only contains from 3 to 6 per cent of tannin and yet, because the non-tannins are relatively low it is chosen as the material to produce the Oak-wood extract largely used in Home tanneries. In a similar manner, as already mentioned, the wood of *Xylia dolabriformis* with only 4—6 per cent tannin gives a likely type of extract.

It will be apparent from the foregoing that there are already available in India a large number of tanstuffs of which, though much is known, much more is continually being learnt; further, that there are a number of at least potential tanstuffs whch it is the duty of Tannin Research Institutes, such as the one at Maihar, to investigate on the practical scale for the benefit of the Indian tanner. It will, however, obviously be a long time before anything like all of them can be thoroughly reported on and the results practically translated into leather. But, when this is done, the first really valuable compendium of Indian tanstuffs will be the result. We already have much information that was hitherto not general knowledge, and Research Institutes founded with the object of such work as we are doing gradually gain a wide experience of varying types of tanstuffs which will put them in a position to give useful information and advice to any tanner. The amount of work to be done, as will be seen, is very large and, in my opinion, will necessitate the institution of several local Tannin Research Institutes in different parts of India. One of these, for instance, should be located in Burma; another at some convenient hill station, to study the tannins of the Himalayan forests; a third would naturally be located in Bengal; a fourth in Bombay; and perhaps a fifth in the North-West Provinces. Madras is already provided with the beginnings of such an institute in the Madras Leather Trades School, where practical trials on similar lines to those at Maihar, have now been inaugurated under Captain Guthrie. And at the latter place the research work is in full swing in the Government Esociet Tannin Research Factory where the work has been going on for several years. It was in recognition of this that Government sent me to Maihar first on my arrival in India. I am not aware that at that time any similar work was being done elsewhere in this country, but there it was in a sufficiently advanced state to compel my admiration of the enterprise shown by Mr. W. A. Fraymouth and his staff in the practical exploitation of certain tanstuffs quite new to the tanning world as a whole, although some of them have been applied—or, more correctly, misapplied, on a very small scale by the local *chamar.* The latter did, however, have the wisdom—on the score of cheapness—to use the tanstuffs locally available, and I feel that this will in the future often be the wisest course for his more educated successor; but his education by the Research Institutes will include the proper collection and preparation of his local tanstuffs before applying them in the tannery. Mr. Fraymouth's principles have always been to obtain such tanstuffs as may be had annually without destruction of the tree, unless the bark happened to be a waste product from large numbers of annual fellings. Other factors he has kept before him are wide distribution, ease of collection and packing, ready solubility of the tannin principle in cold water, and, needless to say, a sufficient proportion of tannin which does not necessarily imply that the richest tanstuff in tannin-principle produces the best leather. Indeed, many tanstuffs with a relatively low proportion of tannin will yield a better leather than others that are very rich. As regards the particular tanstuffs selected for use in a tannery it will be obvious that the large, scale tannery will be able to import tanstuffs from greater distances should the most suitable ones not be locally to hand; but, here again, the art of proper collection and packing in small compass, into bags or pockets, on Esociet lines, so as to get the maximum value out of each railway wagon loaded, ought to be studied. Esociet has used pockets (small gunny bags) which are easy to pack, and easy even for children to handle, with great advantage, and their methods will, I do not doubt, be copied when the end of the war opens up once again the prospect of exporting Indian tanstuffs to the Home country—probably in much larger quantities than ever heretofore.

For the present the Esociet Tannin Research Factory is naturally devoting its energies primarily to the investigation of tanstuffs for war leather; but when the war, is over and an enormous demand arises for tanstuffs suitable for every class of leather making, the value of such work on a multitude of tanstuffs as has been done there will be doubly appreciated; and if, in the meantime, further Research Factories in different parts of India—the desirability of which I have indicated—are not inaugurated I feel sure that there will then be an insistent

demand for their institution. The Esociet Tannin Research Factory has done much, but there is so much more to be done that. in my opinion, there will be ample scope for several other similar institutions.

(*Witness did not give oral evidence.*)

WITNESS No. 476.

HON'BLE Mr. F. C. ROSE, M.I.C.E., *Secretary to the Government of India, Public Works Department.*

WRITTEN EVIDENCE.

Some information regarding available sites for the development of hydraulic power is contained in the statement accompanying this note. This information is the result of an enquiry made in 1907 from the Governments of Madras, Bombay, Bengal, the United Provinces, and the Central Provinces. It will be seen that the information given is of a very general character and the need of further information is evident.

I consider the best method of obtaining further information would be to convene a committee consisting of hydraulic and electrical engineers and experts in those industrial and agricultural concerns which it is particularly desired to promote. This commitee would, in the first instance, draw up a statement of the information required and the points to be specially reported on. With this information in hand local Governments should be asked to undertake a systematic reconnaissance of possible sites. When normal conditions return this work could probably be undertaken by each local Government, with their existing staff, but, at present, in view of the depleted state of the cadres, this would be impossible.

When local Governments' reports have been received the most promising proposals could be examined in detail. For this special staffs would be required comprising hydraulic and electrical engineers, with the necessary establishment. They would be assisted by local officials. Their duty would be to put up detailed proposals for development of power at each site and to submit approximate estimates therefor. On these reports Government could decide whether the scheme could be put forward as a probable sound commercial undertaking. Probably the electrical experts required for the detailed examination of promising sites cannot be found from the ordinary establishment now employed in India, and it will be necessary to procure men on short-term agreements experienced in this type of work.

Province.	Division and District.	Site.	Particulars.	REMARKS.
Central Provinces	Baster State	Chitter Kot Falls	Chitter Kot falls in the Baster State has a fall of 80 feet. Gauging necessary before available power is known. The falls are about 20 miles north-west of Jugdalpur, the capital of the Baster State.	
Ditto	Akola, West Berar.	River Ban near Wari on the border of Jalgaon and Akote Taluqs at the foot of the Satpura hills.	At this place there is a fine rocky bed with an abrupt—practically vertical—fall of about 60 to 70 feet which can be improved to 100 feet or more. It drains 130 square miles of the hilly and rocky tract of Melghat, west of Narnalla fort. The Ban is here a practically perennial stream. Reservoirs for impounding rain water can also be constructed along the course of the river at very small cost by throwing small masonry dams across the narrow ravines. The area drained has 50 per cent more rainfall than the average of Berar, and even in a famine year the rainfall does not fail so badly as in the plains. The electric power generated here could be utilized with advantage at Shegaon, Akote, Akola, and Khamgaon, situated 26, 19, 34, and 36 miles distant, respectively. The physical features here are favourable for cheap hydro-electric energy.	
Ditto	Ditto	River Aran at Masni in Mangrul Taluq at the junction of Mangrul, Murtizapur, and Darwha Taluqs.	At Masni there is a good site for a large reservoir impounding about 5,000 million c. ft. of water with a bund only 2,600 feet long and 90 feet high with 330 square miles drainage area. Most of the land that will be submerged is forest waste land. There is a good site for utilizing the water with a high fall. The electric power thus generated could be utilized at Karanja, Mangrul, Murtizapur, Badnera, and Amraoti, situated at 6, 22, 26, 32, and 37 miles, respectively.	

Province.	Division and District.	Site.	Particulars.	Remarks.
Central Provinces	Akola, West Berar.	River Morna at Shaikla in Akola Taluq.	At Shaikla a large reservoir, impounding water, of 80 square miles can be constructed with a bund 5,000 feet long and 70 feet high. The Morna is practically a perennial stream in ordinary years; the electric energy generated here can be fully utilized at Akola, 16 miles to the north.	
Ditto	Buldana, West Berar.	River Mhas at Nelgaon	Between Waigaon and Hingna, a tank could be made with a bund only 2,600 feet long and the maximum height of 100 feet and impounding over 10 million cubic feet of water with a good site for a waste weir needing practically no cutting. The drainage area of the river Mhas at the site of the suggested tank is only 90 square miles, but the waters of the rivers Mun and Paingunga could, without much difficulty, be diverted to the reservoir, thus increasing the drainage area to 450 square miles. The electric power generated at this place could be ultilized at Khamgaon, Shegaon, Balapur and Akola, situated at distances of 10, 14, 8 and 22 miles respectively. It is considered a promising project with the feasibility of utilizing some minor falls on the river Mun. The Mun and Paingunga are practically perennial streams.	
Ditto	Amraoti, East Berar.	River Sarpin, at Wajar, 8 miles north of Ellichpur.	The river here has a rocky bed with a number of falls along its course, and drains 44 square miles of hilly country to the east of Gawilgarh. The river with its rocky bed has a fall of over 2,000 feet in a length of about 10 miles. With impounding reservoirs along its course, very cheap electrical energy can be obtained. Once hydro-electric installations have been established in this locality, there should be no difficulty in supplying water to Chikalda by utilising the great falls near Chikalda in pumping water up.	
Ditto	Ditto	River Chandra Bhaga, about 8 miles to the north-west of Ellichpur.	This river drains 57 square miles of the Gawilgarh hills with over 2,000 feet fall in its 10 miles course, and the falls on the same with their rocky beds can be well utilized for generating electrical energy as stated above in the case of the river Sarpin.	
Ditto	Ditto	River Shahanur at Raipur at 12 miles to the west of Ellichpur.	The river Shahanur drains 45 square miles of the southern most hilly tract of the Satpura mountains at Raipur, 12 miles to the west of Ellichpur. Besides a number of falls along the course of the river, there is a good site for a large reservoir between Raipur and Moragarh with a bund 2,000 feet long and about 80 feet high.	
Ditto	Ditto	River Maga, north of Pala, 12 miles to the north-east of Ellichpur.	At this point a reservoir may be constructed with a drainage area of 88 square miles of hilly country and a number of falls on the course of the river higher up.	
Ditto	Ditto	River Purna, north of Bisruli, 18 miles to the north-east of Ellichpur.	A large reservoir could be constructed with a drainage area of 166 square miles, and the river must have a number of falls in its course higher up through the Satpura ranges.	
Ditto	Ditto	River Madu, branch of the Wardha, to the north of Deotara, Morsi Taluq.	A series of reservoirs could be constructed with falls along the course of the river with a drainage area of 204 square miles of hilly country. The electrical energy thus generated could be economically and advantageously utilized in working a 2'—6" gauge electric tram line from Morsi to Amraoti.	
Ditto	Ditto	River Chargad at Udkheir in Morsi Taluq, 9 miles to the south-west of Morsi.	A large reservoir could be constructed here with a bund 900 feet long and 80 feet high and with a good site for a waste weir. The drainage area is about 80 square miles. Along the higher parts of the river, in the Satpura ranges, some falls would probably be found which could be utilized with advantage. The electric power generated could be transmitted to Amraoti, 26 miles distant, besides supplementing that required for the Morsi-Amraoti tram-line referred to in the entry above.	

Province.	Division and District.	Site.	Particulars.	Remarks.
Central Provinces.	Amraoti, East Berar.	River Poorna above Assegaon.	No particulars are available with regard to these two sites.	
		River Wardha Chichmandal and Paghal, 10 miles north of Pisgaon Coal Fields.		
Ditto	Chhattisgar States, Division Raipur.	Indrawathi river at Chitia Kote, about 20 miles north-west of Jagdalpur in the Bastar State.	At this site the Indrawathi always has a very substantial flow and the fall is 97 feet. The gauging of the fall was done in May 1906. The main channel discharge is 720 cusecs and that of the secondary channel 40 cusecs with a drop of 85 feet.	
Ditto	Nagpur . .	Junction of the Kanhan with the Wainganga, above the village of Ambhora, 40 miles from Nagpur and 8 miles south of Bhandara.	A dam could be built on the barrier of rock which lies across the Wainganga river.	
Ditto	Ditto . .	Four points on the Kanhan river between the town of Khapa and its junction with the Wainganga.	No particulars.	
Ditto	Ditto . .	Site on the Pench river near the village of Bhowgarh, 30 miles north of Nagpur.	No particulars.	
Ditto	Ditto . .	The Pench river on its leaving the hills north of Kamtee.	Might just be possible to get a site on this river and if sites are found, they would be very favourably situated.	
Ditto	Bhandara, Balaghat.	On the Ghisari river which runs through Odha and Dhansua near Dhansua.	There is a high waterfall here which is reported to be perennial. The stream falls almost sheer in a series of rapids from several hundred feet; in the hot weather this section of stream dwindles to 3 or 4 square feet only.	
Ditto	Ditto	The Nalara river on leaving the hills near Chargaon.	The catchment area of the river is about 200 square miles. and the river should here be capable of giving throughout the year a large body of water running at a high velocity.	
Ditto	Ditto	The Bagh river, one mile from the village of Rajagaon at Gograghat on the Gondia-Balaghat Road.	The fall is about 10 feet in height. The bed of the stream at site is rocky.	
Ditto	Ditto	The Wainganga river near Bhamori, between the villages of Chichgaon and Gurghai.	The height of the waterfall is about 25 feet and the bed of the stream is rocky.	
Ditto	Ditto	The Son river to the north-east of Langi above Bijagarh.	Very promising sites may be found on these streams where they run through the hills above the Balaghat plains.	
Ditto	Ditto	The Uskal and Nahara rivers, east of Chargaon railway station on the Satpura Railway.		
Ditto	Ditto	The Deo river above Bhanpur.		
Ditto	Ditto	The Wainganga river above Balaghat.	Might just be possible to get a site on this river, and if a site is found it would be very favourably situated.	
Ditto	Chanda .	River Erai, 12 miles north of Chanda.	This river passes through hilly country where a dam could be made to hold up water from a catchment area of 300 square miles.	
Ditto	Ditto . .	Ramdighi Pest, nearly 6 miles north-east of Chargaon village, or nearly 22 miles from the Warora railway station.	There is a natural fall of 20 feet at the source of a branch of the Erai river in the Mul hills. From the toe of the hill range at the pool to its source the stream is nearly 2½ miles in length. The catchment area is nearly 3 square miles. If a dam is built, the tank thus formed will contain nearly 53 million cubic feet of water. The water thus available for generating electricity will be nearly 200,000 cubic feet per day for nine months of the year when the stream generally remains dry. The cost of the dam, excluding the apparatus for generating electricity, would come to not less than rupees two lakhs.	

Province.	Division and District.	Site.	Particulars.	Remarks.
Central Provinces	Chanda . .	Sitamkhendi on the river Indrawathi, nearly 125 miles from Chanda and 35 miles from Sironcha.	This natural fall is on the Allapalli-Sironcha Road. It is nearly 10 feet in depth, and the water in the river here flows with great velocity.	
Ditto	Bilaspur . .	The Hasdu river where it leaves the hills above Korba and Chhuri.	A storage site might be found here.	
United Provinces.	Banda . .	River Ken at Kheroni.	The site is a suitable one for a reservoir, but is situated some 30 miles below the Ken Canal head. For effect it must depend on rain supplies. There is not likely to be any available volume in the river during the greater part of the cold weather. There is a catchment area of 7,956 square miles and a flood discharge of 450,000 cusecs.	
Ditto	Pannah State .	Paind village below junction of Sunai and Ken rivers.	Catchment area=5,700 square miles. Flood discharge=325,000 cusecs.	In 1907 it was reported that there were favourable sites for reservoirs, and were situated above the works proposed for storage for the Ken canal, and that the sites were probably too far distant from any commercial centres to be of any value.
Ditto	Damoh . .	Khumergor below junction of Sunaj and Bearmi rivers.	Catchment area=4,126 square miles. Flood discharge=235,000 cusecs.	
Ditto	Lalitpur . .	Giror on the Dhasan river.	This site is probably too far distant from any commercial centre to be of any value. The catchment area is 826 square miles and flood discharge is 100,000 cusecs.	
Ditto	Rewah State .	Lonipur on the Tons river.	Catchment area=3,400 square miles. Flood discharge=4,00,000 cusecs.	
Ditto	Ditto .	Poorwa on the Tons river.	There is a fall here of 100 feet. Catchment area=2,010 square miles. Flood discharge =235,000 cusecs.	
Ditto	Ditto .	Chachai, 3 miles from Poorwa, on the Buhar Nala.	There is a fall here of 300 feet. The immediate site is not suitable for a reservoir. Except during the rains the discharge is small. The catchment area=640 square miles. The flood discharge is 70,000 cusecs.	
Ditto	.....	The Jumna river, 10 miles west of Mussoorie and within 40 miles of Saharanpur.	At this site it is possible to obtain a head of some 220 feet or more. The power thus available is estimated at more than 25,000 H. P.	Government have entered into an agreement with the United Provinces Power Association who intend using the waters of the Jumna for generating electricity.
Ditto	Banda . .	Kotasia on the Paisani river not far from Markundi Station, East Indian Railway, Jubbulpur line.	There is a fall here of 150 feet. The river carries a fair supply in the rains and dries up in the cold weather. Its value must depend entirely on storage. The catchment area=175 square miles. It is not unfavourably situated for Allahabad and Sutna.	
Burma	.....	Hatayi rapids on the Salween river.	Water is available for generating electricity which can be regarded as commercially promising.	
Ditto	.....	One place in Arracan .	Ditto	
Bombay	Nasik . .	The Vaiturna river in Nasik.	The Vaiturna river rises in Nasik above the Ghauts and falls down into Thana below, at about 12 miles from Igatpuri Station on the Great Indian Peninsula Railway and 90 miles from Bombay. The amount of power that could be obtained from this river with storage works is very considerable and probably averages over one hundred thousand horse power continuously.	
Ditto	Belgaum and Kanara.	Castle Rock . .	The Kali Nadi rises at Castle Rock on the Marmagoa Railway along the boundary between Belgaum and Kanara Districts. The site of the power works would be within 60 miles of Belgaum, Dharwar, Hubli, Marmagoa and Karwar. The water power on this river probably exceeds that possible on the Vaiturna (entry above) if storage works be made.	

Province.	Division and District.	Site.	Particulars.	Remarks.
Madras	Kistna . .	Between Daida and Someswaram on the Kistna river above the Bezwada anicut.	The site is neither situated in the vicinity nor connected by easy means of communication with any town or trade centre. It is unlikely that a power scheme in this part of the river can be worked with profit unless the Kistna reservoir project is sanctioned.	
Ditto .	Salem . .	Hogenkal falls, on the Cannedy river, 40 miles from Salem.	It is believed that 1,000 horse power can be developed. Minimum discharge = 96 cusecs.	
Ditto	Madura . .	Uthmat anicut . .	At different places on the Suruliyar river, by means of which the waters of the Periyar lake are passed into Vaigai river. At all these sites the maxima and minima discharges are 1,250 and 250 cusecs respectively. The minima are subject to special storage arrangements being made. Natural flow *nil*. No continuous flow will be available throughout the year at these anicuts unless a reservoir on the plains proposed in connection with the question of utilizing water power of the Periyar tunnel is made.	Government have under consideration an agreement with Mr. Garrett to utilize the waters of the Periyar for generating electricity.
	Ditto . .	Palayamparavu anicut .		
	Ditto . .	Chinnamanur ,, .		
	Ditto . .	Markiankottai ,, .		
	Ditto . .	Saliampatti ,, .		
	Ditto . .	Kattur ,, .		
	Ditto . .	Upparapatti ,, .		
	Ditto . .	Virapandi ,, .		
	Ditto . .	Chattrapatti ,, .		
Ditto	Ditto . .	Periyar Lake tunnel .	At Kuruvanuth at the head of the Cumbum valley 69 miles distant from Ammayanayakanur. Maximum discharge = 1,110 cusecs. Minimum discharge 250. Only 250 cusecs can be given a day for 240 consecutive days.	Ditto.
Ditto	Coimbatore .	Bhavani falls near Thondai, 15 miles above Mettapalaiyam.	There is a 50 feet fall, 20 feet vertical and rapids. Maximum discharge = 3,000 cusecs. Minimum = 40 cusecs.	
Ditto	Ditto . .	Aliyar, Anamalai hills .	There is a series of cascades of 2,000 feet. 500 feet easily available. Maximum discharge = 800 cusecs. Minimum discharge = 6 cusecs.	
Punjab	.....	Rasul	By cutting a channel from the Upper to the Lower Jhelum canal a fall of 78·5 feet can be obtained. Discharge* = 5,000 cusecs representing 44,600 horse power.	*Presumably not the whole year round, but only when water is passed down the Upper canal for irrigation.
North-West Frontier Province.	.....	Tail of Malakand Tunnel on the Upper Swat River canal.	At the tail of the Malakand Tunnel there is a fall of 321 feet in 4,100 feet. The minimum discharge recorded in 20 years prior to 1905 for the Swat river at Abazai was 1,000 cusecs. A perennial discharge of 518 cusecs through the tunnel would be available, representing 15,300 horse power, assuming that 61 feet of fall is lost in the channel.	

SUPPLEMENTARY EVIDENCE.

Q. I.—The list of available sites for the development of hydro-electric power contained in the statement accompanying your note appears to be very incomplete. Some provinces apparently have made more detailed investigations than others. Would it be practicable, without great expense, to get prepared for the use of the public a much more exhaustive list of possible stations, supplying only particulars similar to those given in respect of the majority of sites mentioned in the list?—*A.*—I consider that without very great expense a more exhaustive list of possible power stations could be prepared. At the same time, I think it as well to sound a word of warning. Except on the large rivers which debouch from the hills from the Himalayas and in Madras the success of any possible site will generally depend on the facilities of being able to store a sufficient supply of water in the monsoon to ensure a regular supply throughout the remainder of the year. Investigations in respect of reservoirs must necessarily be more or less detailed though it would generally be possible to indicate by a more or less cursory examination whether any particular site was worth further investigation or not. Such an examination could be carried out by an officer specially deputed for the purpose in each province and would no doubt result in much fuller information being obtained than we have at present and at no great cost. One point which I may bring to notice is that it appears likely that the majority of the sites at which it will be possible to generate really large amounts of power will be in Native States. In this connection it may be noted that the greater portion of the territory in which the rivers flow through the Himalayas lies in Native States. Similarly the larger perennial rivers in Madras have their greatest declivity and consequently their greatest prospective potentiality in the States of Mysore and Hyderabad. I do not intend to convey the impression that suitable sites of fairly large power cannot be

found in British territory, but at the same time I do think that on investigation it will be found that the majority of such sites will entail expensive storage works.

Q. II.—Under existing regulations, by what authority, namely, Provincial or Imperial, are water power concessions granted? Do you consider it desirable to have rules framed somewhat on the lines of the Mining Rules, which will show applicants for concessions what they may expect to obtain, after undergoing the expense and trouble of a survey of the site? —*A.*—The local Government enters into negotiations but under statutory rules contained in Appendix 18, Volume III, of Public Works Department Code, the sanction of the Government of India or the Secretary of State is necessary under certain conditions. Generally speaking the sanction of the Secretary of State is necessary—

(*a*) if the concession is intended to endure for more than ten years and is not accompanied by an unconditional power of revocation or cancellation, and imposes on the revenues of India an annual liability in excess of Rs. 50,000; or

(*b*) imposes on such revenues expenditure or liability to damages in excess of Rs. 12 lakhs; or

(*c*) involves the cession of property or rights estimated in value at more than 12 lakhs,

and the Government of India's sanction is necessary—

(i) if the period in clause (*a*) exceeds 5 years and the liability Rs. 5,000;

(ii) if the sum in clauses (*b*) and (*c*) exceeds Rs. 1 lakh. Below these amounts the local Government can sanction the concession.

I consider it would be almost impossible to frame rules on the lines of part III of the Mining Rules to govern concessions for water-power. The circumstances are so very different. In the case of mining concessions they are all much alike, but in the case of water-power concessions every case will have its own peculiarities, *e.g.*, irrigation, forest, or navigation rights may be concerned, and obviously the concession to generate power from a natural fall will be entirely different to one where storage is required. Care must also be taken to ensure that any particular company is not allowed to monopolize for its own use a site which, if properly developed, might provide power for many more industries and concerns than the particular one in which the company was interested.

(*Witness did not give oral evidence.*)

Witness No. 477.

Mr. A. C. Coubrough.

Mr. A. C. Coubrough, *Controller of Home Indents and Priority, Indian Munitions Board.*

Written Evidence.

On the training of engineers.

In the following notes, I make no attempt to deal exhaustively with the above subject. My endeavour is to emphasize the necessity of raising the status of an engineer and of the engineering profession generally in India. I consider that the benefits which would be derived from such action are first, that it would act as an encouragement to the intelligent youth of India to adopt engineering as a profession, and, secondly, that it would lead to material advancement in the general knowledge of Indian engineering problems and of the means of solving them.

2. My experience of India is comparatively short (7 years), nor can I lay claim to any wide experience of Indian workmen such as is obtained by the works manager of a large engineering factory or railway workshop. I have, however, travelled much in India and have come in contact with employers of labour in all the important industries of the country. I have always taken an interest in problems relating to technical and industrial education. I have also had the advantage of 17 years' experience of engineering workshop practice in the United Kingdom, together with an intimate knowledge of university and technical college curricula and methods. My direct experience of Indian mechanics and engineers is confined to what one derives from the employment of engineering draftsmen, fitters, etc., engaged in the designing, erection and starting up of electrical installations in mills, collieries, etc., and in the supply of a great variety of textile, hydraulic and other classes of machinery.

3. I think it may be taken as granted that engineers in India, and particularly mechanical engineers as distinct from civil engineers have not hitherto received the recognition which is their due. An engineer, whether Indian or European, has little or no standing. He requires no University qualification, and in fact in past years, it has been rather the practice to look upon degrees with suspicion than as evidence of a man's capabilities. In other professions, for instance, doctors, and lawyers, individuals have a certain status as

members of recognised societies or institutions, which societies in general include the whole of the individuals practising that particular profession. No similar organization exists as regards engineers.

4. The effect of this lack of organization among engineers in India is twofold. In the first place, there is an absence of co-ordination of aim and purpose among European engineers in India, and, in the second place, there is lacking the incentive which is very necessary to attract the better class of Indian to take up engineering as a profession. Such incentive would be given by attainment to a certain rank or position in his profession.

5. At the present time, there exist in India several small bodies of engineers who, from time to time, have made spasmodic efforts to form themselves into societies for the advancement of their particular section of the profession. In Calcutta there exist three or four such societies. With two of these, I have been, more or less, intimately connected, *viz.*, a local section of the Institution of Electrical Engineers and a 'Calcutta and District' section of the Institution of Mechanical Engineers. The members of these two societies are recruited from the members of the corresponding Home Institutions of which they are branches, and membership of the local sections is strictly reserved to members of the Home Institutions. Both of these local sections have been in a more or less moribund condition for several years, and it had become evident that some radical change in the constitution of such local sections was necessary, if they were to become representative of the engineering profession in India or even remain in existence.

6. Apart from these two societies, there is a purely Indian Institution, the Mining and Geological Institute of India. This Institute is the only society which has made any attempt to co-ordinate its aims with the industrial life of the country, and it has for many years carried on a work of considerable usefulness in its own sphere.

7. I mentioned above that it had become evident that these small societies, restricted to certain branches of the engineering profession, could not carry on an effective existence in India as they are at present constituted. The committee of the local section of the Institution of Mechanical Engineers therefore recently submitted certain proposals to the Home Council of the Institution with the object of widening the basis of membership of the Indian branch and of placing that branch on a sounder financial footing, so as to enable its work to be more effectively carried on. These proposals are at present under the consideration of the Council at Home, and, at the present moment, I am unable to state what attitude will be adopted towards them.

8. It is, however, evident from recent observations by members of some of the leading Institutions at Home that, not only is the question of the reorganization of sections of these institutions in the Colonies and Dependencies under consideration, but an attempt is being made in the United Kingdom to co-ordinate the efforts of the various engineering societies towards increasing the power and influence of the engineering profession as a whole.

9. I am of opinion that it is very desirable that a move should be made in this direction in India jointly with the deliberations which are taking place at Home. It is obviously far more necessary in India that the various engineering societies and institutions should be co-ordinated, as the total number of members of the various societies in India is comparatively small, and their individual influence small compared with that of the leaders of thought and action at Home. In the past, the members of one branch of the engineering profession have been too much inclined to cultivate acquaintanceship only with engineers in their own particular lines, and have consequently tended to lose the breadth of view which is brought about by contact with men engaged in other co-related spheres of work.

10. The establishment of an Indian Institution of Engineers would be of inestimable benefit not only to members of such an institution, but to India as a whole. The State and the individual would jointly derive benefit from the impetus which would be given to engineering in India by the establishment of a State-recognised institution of Engineers.

11. The actual constitution of such an Institution would require careful thought and working out, but the main principles which, in my opinion, should be embodied in its constitution are as follows:—

(*i*) The Institution should be definitely affiliated with the leading engineering and scientific institutions in Great Britain, and this affiliation should mean more than mere rights of individual members of the Home Institutions to become members of the Indian Institution. It should be the duty and privilege of the Home Institutions to contribute to the upkeep of the Indian Institution a definite proportion of the subscriptions paid by members of these Home Institutions resident in India, and such members would, in virtue of their residence in India, become members of the Indian Institution.

(*ii*) The Institution should be self-supporting, and should not be dependent on State aid for its maintenance. At the same time, I think it would be very desirable that the Government of India should contribute to the establishment and upkeep of the Institution and should have a directing influence on its policy and operations.

(*iii*) The Institution should be given a Royal Charter conferring on it such powers as would enable it to take effectual action for the good of its members and therefore for the good of the State to which they belong.

(*iv*) Under the proposed Charter, the Institution would have powers to regulate the admission of new members and the expulsion of those who might not worthily maintain the dignity of their profession. The Institution would have powers of conferring certain indications of rank to its members either by examination or by the vote of members of the Council of the Institution. Such rank would be in every way equivalent to a University degree, so far as assisting the holder to the attainment of a position in life to which his qualifications entitle him.

(*v*) The Institution would be mainly supported by the commercial and industrial community. The Council of the Institution would be composed of men drawn as far as possible from all the various branches of the profession and would include representatives of the Government of India and of other official or semi-official bodies. The majority, however, of the members of Council will be composed of men actively engaged in the practice of engineering.

12. Such an Institution would not necessarily be the final authority in dealing with all matters connected with the engineering profession. It would have, as before suggested, full powers in regard to the treatment of its own members, but in so far as laws or rules relating to engineering practice or standard are concerned, the Institution would act in an advisory capacity to the Department or Departments of Government dealing with industrial progress, commercial administration or general legislation.

13. The above very brief outline of the constitution of the proposed Institution indicates what in my opinion is necessary in order to give the engineering profession in India the standing and influence required for its proper development.

14. It will be well at this stage to indicate a few of the drawbacks to such development which exist under present conditions. I saw it stated recently by one of the members of the Commission that, if he were asked to sum up the needs of India as a result of the evidence before the Commission, he would have no hesitation in stating that the general plea was for education, education, education. In putting forward this note on the necessity for the establishment of an Engineering Institution, I am adding my voice to the chorus of cries for education. I desire, however, to dissociate myself entirely from those whose cry is for education of the kind which is given in an Indian University. I am an Engineer and I look to the requirements of the engineering profession, and, to my mind, the primary idea as regards education for an engineer is to train the youth of India to an understanding of the dignity of labour. I am not at all pessimistic about the possibility of doing so. It takes time to change the trend of thought and ideas of a Western nation, and, longer still, those of an Eastern race. There are, however, plenty of indications that even in India the practice of past centuries does not necessarily become the practice of the next generation. Industrial India is rapidly awakening, and one sees here and there signs of a different aspect on life to what one might imagine would be possible from reading volumes of Indian economics.

15. Very little, so far as I have seen, has been done towards encouraging the spread of education of the type to which I refer. The most interesting examples are the work which is being done in the schools of the Buckingham and Carnatic Mills, the Industrial school which has recently been started in Bangalore and the educational methods which are adopted at the Sibpur Engineering College. I do not think that there is such a wide difference between the boy born in the Western Hemisphere and his brother in the East that the latter has not some sort of natural inclination towards learning the mysteries of mechanical appliances. I suppose five boys in England out of every *six* at a certain period of life have no greater ambition than to become an engine driver, and I see no fundamental reasons why five out of every *sixty* in India should not have similar aspirations. If these aspirations were encouraged instead of being repressed, we should in a very short time have a nucleus of a body of mechanics and engineers in India who could be trained to use their hands for the benefit of the State.

16. The point I wish to emphasize in this connection is that the proposed Institution of Engineers would insist, as a primary qualification for membership, that the applicant should, in the first place, be a good craftsman. Membership of the Home Institutions is occasionally given to men who have risen to eminence in their profession on the purely commercial side, but the number of such admission is exceedingly few. The great bulk of the members have to prove to the satisfaction of the Council that they have gone through a course of training which included years of work with hammer and chisel, followed by years of service in a junior position, and the same policy would be adopted by the members of Council of the Indian Institution. In this way, encouragement would be given to manual training and actual practical work which, at the present moment, does not in my opinion receive sufficient encouragement or recognition.

17. The Institution would serve a very useful purpose in another direction. Distances are so great in India that the members of the same profession in different parts of the country often do not know each other, seldom meet, and only occasionally carry out any transference of ideas from one to the other. The Institution would form a centre of gravity for all engineers, and would have, as one of its primary objects, the bringing together of members of the same

profession, both by conferences and by circulation of information from one part of the country to another. I have been surprised, many times, to find that engineers in Government service and frequently in the same branch of the service have little or no idea of what is being done by their colleagues in other provinces. In fact, in regard to certain classes of work, Government engineers more or less rely on the representatives of engineering firms to keep them posted, not only in the developments of engineering trade in Great Britain or other parts of the world, but in the developments which may be taking place in a neighbouring province. The Institution would bring such men not only in closer contact with each other, but also with the commercial world and with the needs of India in parts other than those in which the individual for the time was stationed.

18. One must not overlook the advantages of the Institution from a purely commercial point of view. I have suggested above that the majority of the members of Council of the Institution should be drawn from the section of engineers most closely allied with commercial and industrial enterprise. After all, money making, although it may not be a desirable object in itself, is the great criterion of successful progress in any direction. No engineering work can be held to be successful unless it is so from the purely practical point of view of saving money. The Institution, therefore, must be very closely connected with the leaders of commercial industry whose lives are bound up with problems of industrial production, and unless the Institution has some value from the point of view of such men, it can never survive.

19. There is no reason why certain sections of the Institution should not be devoted entirely to scientific work, and in fact, it is becoming more and more recognised by engineers that purely scientific work carried on by men who have no interests in commercial enterprises whatsoever are a very necessary adjunct to commercial progress. The work of such a section is carried out by the individuals engaged on it purely for the love of the work which they are doing, and without any idea of commercial gain entering their heads. But a society composed entirely of such men loses the practical grasp which is necessary for industrial development, and, therefore, it is very essential that the basis of the Institution should be founded on ideas of commercial practicability rather than on those of high scientific attainment.

(*Witness did not give oral evidence.*)

Witness No. 478.

Mr. T. R. J. Ward.

Mr. T. R. J. Ward, C.I.E., M.V.O., *Inspector-General of Irrigation in India.*

Written Evidence.

As I am leaving for Mesopotamia I very much regret to say that I will not be able to meet the Commission, and I supply these brief notes in the hope that they may be of use, first with reference to the sentence at the bottom of page 141 of the (first) Draft Report beginning "The project for," etc., to end of that paragraph; the construction of the barrage and the remodellment of the Canals is a comparatively simple work of a class in which a large experience has been gained in India in the past and recently; the only difficulty will be in actual construction in that there will be more work in the wet than has been usual in other similar works. The local authorities are hard at work preparing a project; the only difficulty about this is to devise a project that can be constructed under the productive public works rules that require that the interest on the sum at charge at the end of 10 years from the date the project comes into operation *plus* the working expenses must be returned. The difficulty here is that Sind has been developed by irrigation, and the difference between present net revenues and those that will be earned when the project comes into operation is all that can be credited to it as nett income, so that the longer the barrage is postponed the more difficult it will be to make a project under these rules, that have proved so far very suitable and will continue to be so for some time yet so far as one can foresee. In any case, whether suitable or not to Sind, the investigation must be made before it can be shewn that the rules are not all that can be desired. I have just returned from Sind and I find all are sanguine that such a project can now be got out. If so, it will be probably the first to be carried out when normal times return, and once in operation, it will be followed probably by a project for another barrage above Sukkur near the Punjab border at Mithankot and another below Sukkur at Jherruck; such weirs have been discussed since 1867, see Colonel R. Strachey's note on Sind, page 76, Appendix V, Famine Commission Report, 1880. About pumping, the Commission have received a note from Mr. Gebbie, the Chief Engineer, Bombay, who has passed hitherto all his service in Sind. I gather from him that he has explained that development by pumping in the area to be commanded by the barrage is fraught with difficulty because the river is shifting and it will be difficult to get a suitable site for pumps. The inundation canals in upper Sind run dry and are not suitable for pumping, but in the delta on the Fuleli Canal, for instance, there is a small perennial flow and a few pumps are in use already, and there seems a field here to help the farmers with expert knowledge to attain to more efficient things. I gathered in discussion with Mr. Lawrence, the Commissioner in Sind,

and Mr. Gebbie that there is a fairly large area of good land on the right bank of the Indus below Kotri that is unsuitable for a flow canal because it slopes from the hills to the river, but it might be possible to irrigate if the water were lifted, The scheme would be a big one, as large, or perhaps larger, than that at Divi in Madras, where 500 cusecs are pumped by eight sets of Gwynnepumps driven by Diesel oil engines. Otherwise, there is not the scope for pumping in Sind that there seems to be in the Punjab and United Provinces where wells are already numerous. The delta of the Indus seems to be like that of the Ganges in Bengal, and the sub-soil water conditions over extensive areas are not suitable for irrigation wells. But when the conditions for perennial flow canals are so extraordinarily favourable as they are in Sind, and when the economic conditions that now obtain have made inundation canals an anachronism, the purpose of those with influence in this matter with regard to Sind should be, it seems to me, to do all that is possible to hasten the advent of a barrage with modern up-to-date canals. I listened to the evidence of merchants to the Cotton Committee at Karachi, and I realized that though the Sind farmer is connected to the world's markets with a good up-to-date railway, dock, and steamship service, yet he can get but a very limited advantage from this because the quantity of his crop was not reliable. The difference of area matured in a good year from that in a bad is, I believe, 800,000 acres; this uncertainty in the yield that will come to market at harvest militates against good business.

With reference to the remark half-way down page 140 that the Irrigation Commission attached but little importance to the results that might accrue from improvements in the methods of lifting water, I have read through the chapter on this subject in part I, General, and I have not found anything wholly to substantiate this assertion; whilst there is something to be shown against its correctness in paragraph 134, page 59, part II, Provincial, where the Commission wrote with reference to steam pumping for irrigation, "this form of enterprise is at present in an experimental state, but it appears to us deserving of every encouragement". At the time the Irrigation Commission toured even in Madras there were few, or no, prime movers and pumps that could be recommended with confidence to the irrigator as designed and proportioned exactly to meet his needs. Since then I have had many discussions with pump makers on this subject, and there seems to be a consensus of opinion that the problem to be solved is a very difficult one, and private mechanical enterprise has not and is not likely to be able to afford to get that access to the minds and experience of the farmer that, for instance, the irrigation officer has by being caught young and worked hard in close contact with the irrigator during those years of glorious energy. Unless this point is realized the progress made in the many machines detailed at the bottom of page 139 will be slower than need be. The designer of machines, both for irrigation and agriculture, must be in the same close contact with the farmer during his impressionable years, as the irrigation engineer and the settlement officer are brought by their work. It should be possible to organize this through the workshop side of the Irrigation Department and the demonstration side of the Agricultural; in both I have met men of talent in, I think, every province I have visited, who have the right instincts in this matter. Doubtless the time is ripe for the farmer to make an advance to his advantage in this direction, and there is no doubt he is doing so, in spite of the fact that he is being "bitten" every time he goes forward, as one agricultural expert said at the Board of Agriculture at Poona. The manufacturer would not "bite" the farmer if he could get into touch with his needs and so provide what was really needed; but the capital required to do this in the way Government is able to do it for its irrigation and revenue services makes it out of the question. I am old enough to recollect the introduction of machinery in South Africa in 1869, and it had not made much advance in England when I first knew it in 1875. The farmer had to learn a lot before he could profit by the machinery, and to my certain knowledge many ruined themselves in the process of learning. In Europe competition among manufacturing engineers can be left to work out the most suitable machines and teach their use, but in India I am afraid Government will have to organize to work this out on some such lines as the agricultural experts are doing now at Lyallpur.

I am of opinion that use should be made of the British artisan to work among the Indian in our workshops and on our civil engineering works; only good handicraftsmen should be selected for this work. It is impossible to say in what heart lies the ambition to improve himself, or in what head the talent; but if it is once known among craftsmen that an *austad* is at work those who have the heart and head will get employed under him. I think that much might be done to raise the level of artisan skill, the first requisite for an extensive introduction of machinery, by the systematic use of craftsmen on our public works. I have been given to understand that Mr. Hoare, the architect in Karachi, has brought out craftsmen from home and was using them to good purpose; the engineer is not necessarily a craftsman and, if he is, he is otherwise occupied, and the opportunities that his skilled workmen have to observe his skill are so rare as to be negligible.

Since agriculture is the greatest industry, and India the greatest agricultural country, and the deltas of Bengal, Burma, and Madras the most intensively cultivated part of India, very particular attention should be paid to the inland waterways of these tracts; the inclusion of inland navigation with irrigation is not altogether happy; such waterways should radiate from harbours for ships from overseas; whilst irrigation is the distribution of the flow of the far distant catchment over the fields. In the deltas only have waterways been profitable so far, and it would seem that a solution to their proper development might be found to bring inland waterways and harbours under the same organization. The aims and interests are much

the same, and their combination into one department would enlarge the interests and, in consequence, increase the influence; whatever reduces the cost of carriage makes for agricultural wealth, a due share of which is likely to go to railways in passenger and high-class goods traffic; moreover, in delta tracts canals are perhaps cheaper to build than are railways. The *pros* and *cons* of railways *versus* canals have been stated clearly by Sir Thomas Higham in his article in the *Imperial Gazetteer*, volume III. I would also refer to Mr. Oswald Lees' lectures on inland waterways to the students at Sibpur. I have found a strong feeling in Bengal, Madras, and Burma that more might be done with our inland navigable waterways.

In conclusion, I would suggest that the removal of tolls as early as possible should be aimed at in the interest of agriculture as an industry.

(*Witness did not give oral evidence.*)

Mr. J. F. Connolly.

WITNESS No. 479.

MR. J. F. CONNOLLY, I.C.S., *Commissoner, Northern India Salt Revenue.*

WRITTEN EVIDENCE.

Note on the Saltpetre Industry in India.

The production of saltpetre in British India is practically confined to the United Provinces of Agra and Oudh, the Punjab, and Bihar and its production, as well as that of *khari* (sulphate of soda) and *rassi* or *sajji* (carbonate of soda), in these provinces is controlled by the Northern India Salt Revenue Department, as explained in paragraph 3 of this note. A small quantity of saltpetre is produced in Madras for local consumption. A certain quantity is also produced in some of the Native States of Northern India, *e.g.*, Bharatpur, Patiala, and Bahawalpur, a part of which finds its way to Calcutta, but no statistics of Native States production are available. Formerly all saltpetre destined for the export trade was consigned to Calcutta, but since the war began a considerable quantity has been shipped from Karachi and a certain amount from Bombay. The recognized centre of the industry is Farrukhabad in the United Provinces of Agra and Oudh, but the refined saltpetre produced in the Punjab is, I consider, superior to that of the United Provinces or Bihar. The refiner in the Punjab is, as a rule, a man of capital who takes out the licenses for manufacture of crude saltpetre in his own name, employs his own servants for the manufacture, and defrays all contingent expenses. The same custom is followed in the case of the Muttra refiners of the United Provinces. Elsewhere the *luniya* takes out the license to manufacture crude saltpetre, pays for the *patta*, and sells to the refiner through a middleman by whom he is financed from start to finish. In the United Provinces and Bihar and a few southern districts of the Punjab the manufacture of crude saltpetre starts in November or December and is continued until the monsoon sets in. The *Jherria* process, or crystallization by artificial heat, is the common one. In the Punjab when fuel is scarce and expensive the *Abi* process, or crystallization by solar evaporation. is more generally resorted to and manufacture takes place in the hot months preceding the monsoon. A good monsoon is favourable to the production of crude saltpetre, but manufacture is seriously interfered with by abnormal winter rains. The crude saltpetre of the United Provinces and Bihar yields, as a rule, from 40 to 50 per cent. of refined saltpetre; in the Punjab the average yield is about 30 per cent. A licensee in Bihar manufactures during the season on the average about 15 maunds, in the United Provinces 55 maunds, and in the Punjab 250 maunds.

2. I attach a statement showing the exports of refined saltpetre to British dependencies and foreign countries in the three years prior to the war. The exported saltpetre is chiefly used as a fertilizer for coffee, rubber, sugar, etc., a certain amount is utilized in China for fireworks, and a small quantity is consigned to Australia and New Zealand for refrigerating purposes. The saltpetre exported for fertilising purposes is, as a rule, of a low grade, *i.e.*, 30 or 40 per cent refraction. As the chief impurity is salt one would expect that a low-refraction saltpetre would be more in demand—also because of the saving in freight. Why this is not so I have failed to obtain any satisfactory explanation in India, but enquiries might, with advantage, be made from the countries concerned. In Coorg the purest saltpetre is used in the best coffee estates, and the Pusa authorities consider its employment as the more economical. The war has created a considerable and fresh demand for saltpetre, and the supply to the Colonies, etc., has had to be greatly curtailed in order to meet the requirements of Great Britain and her Allies. The various purposes for which saltpetre is employed in the United Kingdom at the present moment are stated in a demi-official letter, dated the 6th March 1917, from an officer in the Ministry of Munitions, which is here reproduced :—

"In reply to your note regarding the employment of the large quantities of saltpetre which we import from India to the United Kingdom, as you know, in the main we use it for the manufacture of military gunpowder and blasting gunpowder for mining coal and iron ore and for certain other permitted explosives for mining. The gunpowder contains from anything up to 75 per cent of saltpetre.

"Another important requirement which has grown up during the war for which saltpetre is extensively employed is the production of smoke mixture.

"There is also a fair demand for the material now for hardening tools and steel, and it is coming into use for certain qualities of glass in which the Ministry is interested.

"Then, of course, there is the large commercial requirement for curing bacon and preserved meat generally, for which the war has largely increased the demand. All these various requirements have become so large that we do not allow its sale for fertilizing purposes."

The export trade is in the hands of a comparatively small number of firms who, I may remark, are very much alive to each other's shortcomings. One or two firms buy direct from refiners but, as a rule, the refiner sells through a broker who acts as his representative in the selection of samples for analysis. Until recently this analysis was confined to a test for the usual impurities to be found in saltpetre and the determination of the percentage thereof in a given sample. Recently, however, Chile nitre has been imported to Calcutta and some dishonest brokers utilized it for adulteration, and samples are now subjected to a thorough chemical test.

3. The origin of the system of control exercised by the Northern India Salt Revenue Department over the manufacture of crude and refined saltpetre, respectively, is described in the following extracts from a note which I recorded in January 1915 in connection with certain proposals made by the Government of the United Provinces for stimulating production :—

"The primary object of the Internal Branch of the Salt Department is the prevention of loss to the salt revenue, and it is with this object that the rules contained on pages 48-53 of volume I of the Departmental Manual, which have the sanction of the Governor-General in Council, and the departmental instructions contained on pages 89-126 of the same volume, have been framed.

"In the manufacture of saltpetre, both crude and refined, and *khari*, as manufactured in the United Provinces*, salt can be obtained as a by-product. In the case of *rassi* or *sajji* no salt is educed in the process. But in the case of crude saltpetre, *khari* and *rassi* or *sajji* the plant of the factories is the same and this plant can also be utilized to manufacture salt from saline earth, or earth-salt as it is called, quite a different article from saltpetre salt. Such factories are, therefore, licensed in order that the person responsible for the working of a factory may be ascertained and that the locality at which the manufacture is to be carried on may be known so that it may be possible to exercise supervision and prevent the production of salt illicitly. The fee on the licenses in the Punjab and United Provinces is Rs. 2 per license, except in the case of *khari* made by solar heat, for which the license fee is Rs. 10. In Bihar, for special reasons, the fee on each kind of license is only four annas. The total income from these fees amounted in 1913-14 to Rs. 28,000 (round) and if the concession asked for in respect of licenses involved merely a question of surrendering this source of income the solution of the case would be a simple one. But larger issues are at stake and, to clear the ground for the discussion of the proposal of the United Provinces Government, I think I had better give a brief account of the causes which led up to the imposition of the restrictions now in force in regard to the production of saltpetre which term as defined in the Salt Act includes *khari* and *rassi* or *sajji*.

* In Bihar the process is different and no salt is educed.

* * * * *

"These restrictions apply to the United Provinces, the Punjab, and Bihar. In the case of the United Provinces the necessity for control is much stronger than in either the Punjab or Bihar because of the existence of large tracts of rich saline soil from which earth-salt can easily be extracted. In the Punjab such tracts are confined to a few districts in which a preventive establishment is maintained; in Bihar they are so limited as to be almost negligible. In the Punjab, moreover, there is never likely to be demand for earth salt, except in the few districts just referred to, as the Punjabi has always been used to the rock-salt from Khewra and tastes in salt differ as widely as tastes in tobacco, opium or wine. But in the United Provinces earth-salt has been a favourite form of salt in many districts. It was manufactured and consumed to a large extent in Oudh "where it had a high reputation" and, before the annexation, its importation from that province into British India had to be forbidden. It was also manufactured and consumed largely in districts in the Agra Province, notably Etah, Mainpuri, Cawnpore, Allahabad, Jaunpur, Agra, and Meerut. In 1831 its manufacture was prohibited, and illicit manufacture on an extensive scale was carried on, and in 1838 its manufacture was for a time again permitted under supervision. In 1843 it was finally prohibited. But the *luniya* whom I have seen described as "that hereditary incorrigible salt manufacturer", for long taxed the efforts of the preventive staff and, taking advantage of the fact that saltpetre manufactories were then ill-controlled, caused much loss of revenue by educing salt from saltpetre or by making salt from saline earth under the cloak of a saltpetre factory license. This led, in 1861, to the saltpetre industry, including manufacture, of *rassi* or *sajji* and *khari* being brought under strict control—which was made stricter in 1867—by the introduction of the system of licenses now in force and by the creation of "proscribed"† areas which will be presently dealt with. The illicit manufacture of earth-salt, however, died hard, and was only finally crushed after many years. This was due partly to the efforts of the

† Proscribed areas were those in which a high degree of salinity was believed to exist, and no license was granted for any such area unless an examination of the soil disproved the assumption.

preventive, staff and partly to the cheapening of salt owing to the reduction of the duty on the one hand and on the other to improved means of transport as the railway system extended. In 1868 the price of salt was Rs. 6-7-10 per maund at Allahabad, its present price being Rs. 2-2-4 per maund. That illicit manufacture had, however, been widespread may be judged from the fact that, in 1868, the preventive staff employed in the United Provinces reached a total of 1,277 officers, subordinate officers and men, while 1,052 persons were punished for offences under the Salt Act. In 1913-14 the total cadre of the Internal Branch, Upper and Lower Divisions. amounted to only 342 officers and men, including 243 peons, and the number of persons convicted in the three areas of control was only 116.

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"It now remains for me to deal with refineries. The necessity for maintaining control over refineries has already been explained, but the control exercised is of the mildest description and the remarks of the Government of the United Provinces are here again based on a misapprehension and are, in fact, absolutely misleading. Compared with the control exercised over distilleries the refiner is practically a free agent. Salt and *sitta* are unavoidable by-products in the manufacture of refined saltpetre, and saltpetre, salt though it may only fetch four annas a maund, is a marketable commodity in certain tracts. Before we took over the Bihar Circles it was calculated that, at the then rate of duty, Government was losing nearly 10 lakhs a year through illicit trade in saltpetre salt, and large seizures of such salt have been made from time to time. It is not correct to say that this salt is only used for curing hides. It is an edible commodity and in parts of Oudh is preferred to other kinds of salt. Salt produced in a refinery is kept under the lock and key of the refiner himself. The refinery is visited about once a month by the Circle Officer or Inspector, and if the refiner wishes to excise it he can then do so; if not, it is destroyed under departmental supervision. The refiner suffers no inconvenience except having to wait for the visit of the Salt Officer. *Sitta* may contain 60 per cent and upwards of salt, and salt can easily be educed from it at a minimum of cost. As *sitta* it is utilized for curing hides, and has a market value. Its disposal is regulated on the same lines as saltpetre salt. In the course of the past month I have visited about half of the refineries in the United Provinces and Bihar and I have seen or heard nothing to justify the allegation that legitimate operations are being seriously hampared. I have rarely come across a more contented body of men than the refinery licensees. I welcome, however, the suggestion put forward by Messrs. Waldie and Co. that refineries should be allowed to compound for salt duty. The suggestion, which has its parallel in cases where business firms are allowed to compound for octroi, is an excellent one and will be given effect to as soon as possible. But, otherwise, I see no necessity for modifying in any way the present system of controlling refineries."

4. As a result of the proposals I then made with a view to stimulating production the license fee for manufacture of crude saltpetre, *rassi* and *sajji* and *khari* was reduced to one rupee, a system of issuing licenses through the agency of the Post Office was originated, cretain vexatious rules for the control of the manufacture of *khari* were cancelled, proscribed areas was thrown open, and refinery licenses were permitted to compound for salt duty, though, so far, no refinerhas taken advantage of this concession. The system of issuing licenses through the agency of the Post Office has proved a distinct success and saves the *luniya* much trouble.

5. At the commencement of the war the saltpetre industry had been on the decline for some years. In 1858-59 the exports were over 35,000 tons; in 1913-14 the exports were only 13,400 tons. The decline has been attributed to the vexatious prosecutions for breaches of the Salt Act and rules thereunder, and to the zeal or greed of supervising officers of the rank of Inspector and of the lower grades. There is, however, a great deal of exaggeration in all this. In the ten years succeeding the assumption of control in Bihar the industry reached its zenith of prosperity and the development of the industry throughout the whole areas of control during the past three years as shown below speaks for itself. The Salt Act and rules thereunder do not, I might point out, compel anyone to make illicit salt any more than the Deceased Wife's Sister's Act, as some of its opponents feared, compels a man to hazard a second venture. The *luniya* has some grounds for complaint, but like every Indian with a good case at bottom he destroys it by his *mubaligha*, or gross exaggeration. I gather that in Bihar the Inspector generally gets 4 annas per license *dustooree* and in the United Provinces Rs. 2 and, possibly, similar amounts pass when works are inspected. The fact is that the subordinate ranks of the Salt Department are no better or worse than the similar ranks in the Irrigation, Railway, or Land Revenue Departments. The more real causes of the decline are that the natural and synthetic products of Germany have come into the market, and are cheaper and better, and also that the demand for saltpetre for gunpowder is no longer what it was as it is not now used or, if used, is used to a less extent than formerly, for many of the new high explosive gunpowders which have replaced, except for special needs, black powder.

With the increased demand for saltpetre that arose with the war, and the good prices that have been obtainable, the industry has been resuscitated and, but for the extraordinary rains exports in 1917, in all probability would have reached 40,000 tons and, as nothing but

low refraction saltpetre can be exported, this is really the equivalent of at least 50,000 tons in normal times. The following figures are of interest :—

Number of licenses issued for production of crude saltpetre.

	Bihar.	United Provinces.	Punjab.
1913-14	24,545	5,275	1,371
1914-15	29,970	6,270	1,648
1915-16	30,501	8,495	2,291
1916-17	30,251	11,169	3,467

	Number of refineries.			Production of refined saltpetre in maunds.		
	Bihar.	United Provinces.	Punjab.	Bihar.	United Provinces.	Punjab.
1913-14	213	82	32	1,85,373	1,69,756	87,010
1914-15	205	83	33	2,22,123	1,88,886	1,06,176
1915-16	213	95	37	2,19,565	2,36,658	1,52,301
1916-17	227	128	48	2,41,038	3,00,566	2,45,976

The cost of a refinery license is Rs. 50.

Licenses were applied for in the case of only 400 formerly proscribed villages, but 1,500 other villages were worked for the first time. The development of production in the Punjab has been remarkable and has not yet reached its maximum.

6. I have now to consider whether the saltpetre industry might be extended and developed by a relaxation of the rules in force and by improved methods.

If the present demand for saltpetre were to continue, with its attendant high prices, I consider that so far as rules and regulations are in question no further incentive would be necessary either to the *luniya* or to the refiner, both of whom have profited much in the past three years. In any circumstances I am most decidedly of opinion that no further concession in the matter of control is called for in the case of the refiner. Whatever else is settled that control which is almost nominal should be maintained. In other words, the refiner must excise his salt under supervision or destroy it. It is puerile for Mr. Hutchinson or anybody else to assert that good edible salt cannot be produced in a refinery. The department has 60 years' experience to the contrary. I have sent for the Hon'ble Mr. Low's inspection samples of salt so produced which is as good edible salt as any Liverpool salt I have seen and which will stand the test of a chemical analysis. In the Patna district this year a refiner was sent to jail for six months and his agent for two months, the latter being also fined Rs. 500 for smuggling 57 maunds of first-class salt out of his refinery, the sentence being upheld by the High Court. At the present moment the Punjab refiners are taking out for the first time licenses for the manufacture of saltpetre salt owing to the high price consumers are ready to pay for it.

As regards the *luniya* I am not prepared to admit that the control exercised by this department over his operations has had any very appreciable influence to the bad.

Nevertheless, on the assumption that we return after the war to normal conditions, I am prepared to recommend to the Government of India that the *luniya's* operations should be freed from control of any sort ; in other words, that the Internal branch (except the Rajanpur Circle) should be abolished. The main object of that Branch was the suppression of the manufacture of earth, salt, and that object has been obtained for some years, and I do not believe that in normal conditions the manufacture of earth-salt is ever likely to revive. I would leave it to the ordinary district excise staff to see that it does not, and I would leave refineries to be dealt with by this staff also. As to maintaining control over the illicit practices of the *luniya* with the present establishment of the Internal Branch I am now, after three years' close contact with the working of that branch, decidedly of opinion that the game is not worth the candle. That control is pure *camouflage* and of a poor order. I do not believe that it has the slightest effect in checking illicit practices. It is a common saying in the department that a *luniya's* dâk runs for 40 miles; in other words, when a Circle Officer or Inspector is on tour his movements are known 40 miles all round. Even if this were not the case what can the establishment on its present reduced scale do to check production of salt? In the whole Punjab there is no Circle Officer and only one Inspector. In the Saran Circle of Bihar there are, scattered over an area of over 6,000 square miles, some 18,000 crude workers controlled by one Circle Officer and five Inspectors. They cannot visit each *luniya* even once a year. A *luniya* can undoubtedly produce good edible salt but, even if we could prevent it, the quantity is relatively so insignificant that I would not grudge the poor dog his bone. It is, I now consider, mere waste of money to maintain the Internal Branch That its abolition will mean the reduction of the cadre of the department is unfortunate, but I cannot assert that this in itself is a sufficient ground for its maintenance. In short, the Internal Branch has accomplished its main object, the suppression of the manufacture of earth-salt, and may now chant its *nunc dimittis*.

7. There remain for consideration the questions whether improved methods can be devised for the production of saltpetre, and whether the *luniya* can be brought into direct relation with the refiner and the middleman ousted. In my opinion it is as impossible to dispense with the middleman as it is to dispense with the refiner. The *luniya* is of the poorest

of the poor. From start to finish he is financed by the middleman, who is equally necessary to the refiner. As to improved methods of production I support Mr. Hutchinson's proposals and have nothing to add to them.

As regards refined saltpetre I think that it was a great mistake not to sanction a proposal of Dr. Leather's for further testing the apparatus described in Pusa Bulletin No. 24, page 16.

It was, I consider, vetoed on inadequate grounds. In any case, now that it is recognized that the refiner cannot be eliminated, no time should be lost in getting the further test carried out. If it is successful there are plenty of refiners who would adopt it at once.

Statement showing the exports of Saltpetre from Bengal.

	Quantity.		
	1911-12.	1912-13.	1913-14.
	Cwt.	Cwt.	Cwt.
British Empire.			
United Kingdom	44,514	46,213	49,280
Ceylon	28,258	43,320	43,312
Straits Settlements	10,773	10,253	7,369
Hong Kong	85,043	86,159	80,679
Cape Colony	81	238	287
Natal	...	30	3,988
Mauritius and Dependencies	37,486	45,222	28,739
British West India Islands	495	1,490	12,432
Victoria	140	219	638
Queensland	...	...	...
New South Wales	326	195	100
New Zealand	40	...	...
Other countries	40	20	20
Total British Empire	*207,196*	*233,359*	*226,844*
Foreign Countries.			
France	1,495	1,025	1,000
Italy	...	...	200
Java	242	121	664
Siam	1,492	1,110	1,034
China (*exclusive* of Hong-Kong and Macao)	1,542	90	...
Japan	...	...	...
United States of America.			
Atlantic Coast	55,207	54,380	27,200
Pacific Coast	3,324	2,154	600
Total United States of America	*58,531*	*56,534*	*27,800*
French West Indies	...	...	5,000
Other countries	20	...	...
Total Foreign Countries	*63,322*	*58,880*	*35,698*
Total	270,518	292,239	262,542

(Witness did not give oral evidence.)

Witness No. 480.

Major H. Ross, M.B., F.R.C.S.I., *Additional Assistant Director-General, Indian Medical Service.*

Written Evidence.

The Director-General, Indian Medical Service, is, in conjunction with the Director, Medical Services in India, responsible for the equipment and supply of all military medical stores, and with the Quartermaster-General in India for military veterinary medical stores.

He is also responsible for the supply of medical stores to Government and Government-aided institutions (both medical and veterinary) on the civil side, and for the X-ray equipment required for both military and Government civil hospitals. In addition, since the outbreak of war, the supply of artificial limbs to disabled soldiers, dental equipment to army dentists throughout India, the equipment of orthopœdic institutions has devolved on the Medical Stores Department.

He also, at the request of other Government departments, assists in procuring or manufacturing a great variety of articles urgently required for war purposes, which cannot, strictly speaking, be adjudged as coming under the nomenclature of medical supplies.

The stores required are obtained:—

(1) By importation through the India Office.

(2) From other Government departments, such as the Supply and Transport Corps, Military Works Department, Department of Revenue and Agriculture, etc.

(3) By purchase from business firms and contractors in India.

(4) By manufacture at Medical Stores Depôts.

For storage, manufacture, and distribution there are five Government Medical Stores Depôts, *viz.*, at Calcutta, Lahore Cantonment, Madras, Bombay, and Rangoon, under the control of the Director-General, Indian Medical Service; of these the depôts at Lahore Cantonment, Madras, and Bombay are manufacturing as well as supply depôts, those at Calcutta and Rangoon being mainly supply Depôts.

Each of these depôts is in charge of an Indian Medical Service officer who is known as the Medical Storekeeper to Government, and it is customary for officers once appointed to the Medical Stores Department to remain in that department throughout most of their service.

Medical Store depôts also undertake the repair of surgical instruments, etc., returned by both civil and military institutions.

Prior to the outbreak of war the Medical Stores Department was manufacturing pharmaceutical preparations to a considerable extent, and the fact that it was in a position to do so has been of material assistance in meeting the greatly increased demands not only from military hospitals in India, but from overseas forces.

Prior to the arrival of a British Base Medical Depôt at Bombay in January 1917 we were responsible for the supply of all the medical and surgical stores required by the army in Mesopotamia, and still continue largely to supplement the requirements of this depôt, in addition to supplying all articles coming under the heading of Indian pattern field medical equipment.

We have equipped all General Hospitals, Field Ambulances, Clearing and Stationary Hospitals, Advanced Depôts of Medical Stores, Sanitary and X-ray Sections to meet the demands, both for the army in India and for overseas forces, as from time to time required by the military authorities.

Owing to freight difficulties and in order to relieve the strain on the Home resources, every endeavour has been made to develop the manufacture of medical requirements from Indian sources.

It was recognized that many articles formerly imported could, and should be, manufactured in India.

To assist in this direction, at our request, the Army Department sanctioned the deputation of an Advisory Chemist to the Madras Depôt, also a Chemist for the Bombay Depôt; these are in addition to the three Pharmaceutical Chemists already attached to the Medical Stores Depôts at Lahore, Madras, and Bombay.

The progress made of late by the Medical Stores Department in the utilization of Indian resources in manufacturing drugs is considerable.

The following articles which were, prior to the war imported are now either being manufactured at our depôts in India, or experiments regarding the possibility of their manufacture have been undertaken.

I.—*Medical Stores Depôts are manufacturing our total requirements of :—*

(1) Absolute alcohol from rectified spirit.

(2) Amylum B. P. (starch) from rice.

(3) All B. P. belladonna preparations (from Indian-grown bell adonna).

(4) Digitalis preparations, formerly manufactured from imported leaves, now manufactured from Indian leaves.

(5) Lysol from saponified cresol.

(6) Ferri sulphas from iron filings (foundry waste) and sulphuric acid.

(7) Thymol (pure white crystals) from ajwan seeds

(8) Nux vomica preparations from the seeds.

II.—*Special articles manufactured at our Bombay Depôt to meet war demands.*

(1) Vermijelly. } Deterrents to attacks by mosquitos, etc., supplied in large
(2) Antifly spray. } quantities to Mesopotamia.

(3) An insecticide substitute for Keating's powder, which is now unobtainable in India.

(4) Bamber oil—an insecticide oil.

(5) Sinclair's glue, from glue, glycerine, calcium chloride, and thymol—a substitute for adhesive plaster.

III.—*Preparations we have lately succeeded in making, of which we hope shortly to manufacture our total requiremnts :—*

(1) Ether.

(2) Tannic acid B. P.—has been manufactured from myrobalans, and from Divi Divi; samples are now under test.

(3) Silver nitrate—the crystals are manufactured by several firms in India, and we have succeeded in making silver nitrate sticks from silver nitrate crystals of local manufacture.

(4) Hydrargyrum ammoniatum.
Hydrargyrum oleatum.
Hydrargyri iodidum rubrum.
Hydrargyri oxidum flavum.
Oxymel scillæ.

(5) Chaulmoogra oil B. P. (oleum gynocardia).

(6) Boric acid—Enquiries regarding the availability of raw material show that sufficient raw borax (from Tibet and Nepal) are obtainable in the Calcutta market to meet departmental requirements. Sulphuric acid is the only other raw material required and ample quantities are available in India. Manufacture on so small a scale as to meet our requirements will not pay commercially so long as imported boric acid is obtainable within certain limits of price.

(7) Collodium flexile.

(8) Soda sulphate exsiccated.

IV.—*Preparations the manufacture of which is now in the experimental stage :—*

(1) Calcium chloride.

(2) Calcium carbonate precipitated.

(3) Strychnine.

(4) Emetine and its derivatives from ipecacuanha root.

(5) Various essential oils.

V.—Experiments in the manufacture of glucose from starch and the refining of crude glycerine of local manufacture have not, up to the present, proved successful. Messrs. Smith, Stanistreet and Co., have succeeded in manufacturing a commercial liquid glucose which is sufficiently pure for our ordinary manufacturing purposes ; we propose obtaining our requirements from them.

In addition to the above, Lieutenant McCulloch, our Advisory Chemist at the Madras Depôt, has produced a solution for cleaning the incrustation which accumulates on the inside of boilers which is much less expensive and just as effective as the patent boiler anti-incrustator previously used.

A member of the staff at our Madras Depôt has devised an attachment for the pill-rounding machine which effectively removes the coating from discoloured pills without affecting either the shape or weight of the pills. This invention is now under trial and, if satisfactory, should effect a considerable saving; the inventor has applied for permission to patent it.

In order to relieve, as far as possible, the strain on Home resources, and to economize in freight, every effort has been made to extend the manufacture of various surgical dressings at our depôts and, at the same time, to encourage reliable private firms to extend their output in this direction.

Our efforts have been most successful and have, undoubtedly, effected a considerable saving to Government, especially in the local purchase of cotton, wool, gauze, lint, etc., the prices of which, on the English market, have advanced roughly 400 per cent since 1914.

The absolute necessity for securing the correct percentage of medication and complete sterilization make it essential that orders for the manufacture of these articles should only be placed with firms whose reliability has been fully ascertained.

Our depôts are making first field dressings for the use of troops in the field, rolling, compressing, and sterilizing bandages of various kinds, medicating, and compressing the different cottons, gauzes, and lints required.

Private enterprise is largely responsible for the supply to us of absorbent cotton of good quality, lint, gauze, etc., and, in addition, is being utilized to supplement the supply of medicated and compressed dressings.

The Indian Medical Stores Department is a very large purchaser of surgical instruments and appliances, of which an important source of supply for many years has been the workshops at the Medical Stores Depôt, Bombay. Part of the premises has been handed over to a private concern which has established in it a factory to supply a portion of the requirements of the Department.

It employs several hundred workmen who have been trained to make and repair instruments and appliances.

War demands have led to many new developments, including the manufacture of artificial limbs and orthopædic appliances.

Our depôts manufacture almost all the pharmaceutical preparations required, including tablets, pills, extracts, tinctures, liniments, liquors, unguents, powders, etc.

Various oils, such as castor, arachis, are expressed from Indian seeds.

Our Madras Depôt also compresses oxygen in cylinders for issue to hospitals.

Field medical panniers, chests, fracture boxes, etc., required for field hospitals (including veterinary) are also made at our Bombay Depôt.

The question of ascertaining what raw materials are, or can be made, available in India, and the best methods of obtaining supplies, both for immediate requirements and with a view to future development, is being investigated by this office.

It is recognized that up to the present the indigenous resources of India have not been utilized to anything like the extent possible. Our practice prior to the outbreak of war was to purchase in England, through the medium of the India Office, not only manufactured drugs, but most of the raw materials required for the manufacture of pharmaceutical products some of which raw materials had actually been exported to England from India.

As examples of this sandal-wood was exported as wood and returned in the form of oil.

Myrobalans sent Home returned as tannic acid.

Nux vomica beans went to England and returned as the powder and extract, and in the form of Strychnine.

Potash salts existing in India were never utilized in making potassium carbonate, bicarbonate, acetate, citrate, cyanide, red and yellow prussiate, etc.; all these are now being made by private firms in India.

Ajwan seeds were exported to Germany and returned to India as thymol; we now manufacture.

Such examples could be multiplied, showing how little indigenous resources were utilized.

One of the great difficulties heretofore experienced has been that of organizing practical methods of collection and the present heavy cost of such collection without proper organization.

The high rail freights from sources of supply to the seaports or manufacturing centres in India permitted Germany and other producing countries, in many instances, to collect, ship to London, and reship to India at prices which were actually lower than indigenous products could be made available at the seaports of India.

To exemplify this take the case of belladonna.

This root was grown in Germany, collected, dried, packed, shipped to London, paying one or two middlemen's profits there, reshipped to India, duty paid on entry, and bought in India at Rs. 40 per cwt..

The cost of collection, royalty (in the case of private firms), and rail freights to Calcutta or Bombay made it impossible for Indian, grown belladonna to compete.

The drug grows wild in India in quantities probably ten times greater than the Department's requirements, and is now being successfully cultivated both at the Kumaon Gardens, and by Messrs. Smith, Stanistreet and Company, Calcutta.

To take another example—boric acid. This has up to now been invariably imported.

The raw borax is available in large quantities in Nepal and Tibet, but the cost of transport from these countries to a manufacturing centre such as Calcutta has hitherto made it possible to import both pure borax and boric acid more cheaply than the latter could be prepared from the country borax. When, as is probable, the price of imported boric acid reaches certain limits it will then be economical to manufacture in India on a commercial basis, but the demand in India is comparatively small and it is improbable that the manufacture of boric acid would be profitable after the war.

The general investigation as to the possibilities of obtaining Indian-grown products has occupied our attention and, on the 14th December 1917, a note on the desirability of taking up the question of the cultivation of medicinal trees and plants in India was drawn up by this office and submitted to the Department of Revenue and Agriculture.

This note, a copy of which is attached, merely, as it were, touches the fringe of possibilities, and, owing to the almost complete lack of data in the form of any up-to-date literature or reliable information on the subject, a considerable amount of work and enquiry still remains to be done.

As to the feasibility of the cultivation and the best methods of obtaining drugs of high grade of quality, the Department of Revenue and Agriculture is, it is considered, the best fitted to judge and make arrangements.

Many of the medicinal plants required grow wild in Indian forests but, owing to the hitherto small demand, are classified as minor forest produce, and no special attention appears to have been paid to them, nor does there exist, as far as is known, any effective organization for collection.

In the first place it would appear desirable that a survey should be undertaken to ascertain what medicinal plants grow wild in the forests, where such plants grow most freely, and are most accessible for collection.

Such a survey would assist in supplying Government's requirements and those of private firms, possibly creating a lucrative export trade in the future.

This undertaking could only be carried out thoroughly by the Forest Department and the Botanical Survey.

Articles such as castor-oil seeds, cinnamon, senna, cloves, and various others of every-day consumption known to grow, and to be available in large quantities in India, have not been considered.

It is also advisable that there should be centralization of effort in anything that is done in this direction as, at the present moment, there appears to be considerable overlapping.

Our efforts have been concentrated chiefly in the direction of obtaining satisfactory and regular supplies to meet our own requirements, but enquiries have opened up the larger question of the possibility of creating a considerable and valuable export trade from India and, incidentally, making the Empire self-supporting as regards a number of products formerly obtained from what are now enemy countries.

There can be little doubt that a market would be available as private firms in India have been, and are now, exporting to Great Britain, America, and other countries Indian-grown drugs which these countries formerly obtained elsewhere.

The demand exists, and the problem to be overcome is mainly that of organizing cultivation and collection, also the reduction of railway freights on such products over long distances, the latter as a temporary measure until information is obtainable as to what rail tariffs such products can reasonably bear to allow competition with other sources of supply outside India.

Owing to the fact that all purchases of the products mentioned in the preceding paragraphs were, prior to 1914, made through the medium of the India Office, little or no information was available in this office to show what India could supply, and the accumulation of such information as has already been obtained has entailed prolonged enquiry.

Certain private firms have been of considerable assistance in giving us information regarding the possibilities of obtaining raw materials or of manufacture.

It has been our policy to encourage, as far as possible, private firms to extend their activities in the direction of the manufacture of indigenous products. This is shown by the fact that, prior to the war, practically no local purchase was made by us except to meet urgent demands for imported articles, whereas, during the past ten months, the amount expended to meet our ordinary annual requirements and war demands for stores previously imported by us amounted to Rs. 15,92,376.

Owing to the absence of a Food and Drugs Act, and the prevalence of adulterated drugs, one of the greatest handicaps we have had to contend with has been the elimination of unreliable sources of supply.

In dealing with purchase of drugs, surgical dressings, and instruments the question of quality is all-important.

It is, unfortunately, true that in India the difference between samples submitted and actual supplies subsequently delivered is liable to be considerable and, until trial orders have been placed and deliveries have been found to be according to the standard required, it has been very necessary to exercise the greatest caution in placing orders for large quantities only with firms whose reliability is assured. We are constantly testing the reliability of new firms who offer us supplies, and when we consider them reliable we place trial orders with them, the continuance of our dealings with such firms depending entirely upon their supplies being up to the standard required.

Another difficulty experienced, more particularly with the smaller firms, is that in their anxiety to obtain contracts they undertake more than they can safely guarantee and break down as regards delivery within the period contracted for. They are also prone to quote terms which, in practice, they are unable to carry out without either suffering heavy loss or having to ask for a revision of rates owing to fluctuations in the market.

Under present conditions we are strongly of opinion that our best policy is to place no reliance upon any doubtful source of supply as failure to fulfil contracts might involve serious consequences in our failure to meet war requirements.

The question of the possibility of obtaining supplies of Indian-made glassware for laboratories early engaged our attention, and we succeeded in obtaining certain articles such as Petri dishes, Litre flasks, glass tubing, and test tubes of reasonably good quality made by the Upper India Glass Works, Ambala City.

The firm is, however, a small one and their ou tput is very limited; we suggested *vide* our letter No. 342—6271—3—17, dated the 12th September 1917 (copy attached) that this question of glass manufacture in India is one to be taken up by either the Department of Commerce and Industry or by the Indian Munitions Board.

Our consumption of bottles and glassware generally is considerable, and up to this we have not been able to find any firm in India who is in a position to undertake to manufacture our requirements.

This is regrettable as Japan is already shipping enormous quantities of bottles to India some of which we are purchasing.

Japanese bottles, however, are unreliable as regards capacity, although the shape and quality are fairly good.

Among our largest Indian sources of supply, both of imported and locally manufactured goods, are :—

Loose woven bandages—The Bengal Jail Department.

Wool cotton, absorbent—Messrs. Andrew Yule & Co.

Cottons and gauzes, medicated and compressed—Messrs. Smith Stanistreet & Co., Calcutta (We propose placing orders with the Bengal Chemical and Pharmaceutical Works, Calcutta).

Oil of turpentine and resin—	from Forest Departments, United Provinces and Punjab.
Sandal-wood oil—	Mysore State Distillery.
Glycerine, medicinal—	North-West Soap Company.
Liquor ammonia fortis— Acid sulphuric, B. P.— Acid hydrochloric, B. P.— Acid nitric, B. P.—	D. Waldie & Co., and Bengal Chemical and Pharmaceutical works, Calcutta.
Medicinal potash salts, such as acetate, bicarbonate, etc.—	Messrs. Smith, Stanistreet & Co.

The Indian Institute of Science, Bangalore, is kindly making for us portion of our requirements of the following drugs :—

Calcium lactate.

Sodium acetate.

Aniline oil.

Lactose.

Calcium chloride.

Ethyl chloride.

It is essential that during the war we should manufacture our requirements, as far as possible to safeguard ourselves, as private firms are daily finding increasing difficulty in obtaining imported drugs, a difficulty which will almost certainly become intensified in the near future.

The policy to be considered, however, as a post-bellum problem is whether the Government Medical Stores Department should continue to manufacture articles which reliable private firms are also manufacturing in sufficient quantities in India from Indian raw materials. If the policy of encouraging private enterprise in developing manufactures

is carried to its logical conclusion the manufacture of many articles at our depôts should not be continued; only such articles as are not manufactured on a sufficiently large scale by private enterprise should continue to be manufactured by us.

It appears essential, however, that we should not discontinue any manufacture until the output by reliable commercial firms has been established on a sufficiently large scale as to render it absolutely certain that Government will be able to obtain all its requirements without difficulty and at reasonable prices.

The same policy would seem to apply also to the question of cultivation of medicinal plants by Government (except those such as cinchona, poppy, ganja, etc., which are under special Government control).

Once the possibility of cultivation on a commercially successful basis has been ascertained private enterprise should be invited to undertake this. Of course, we presuppose that manufacture by private enterprise should furnish us with supplies at least as cheaply as we are able to manufacture ourselves.

U. O. No. 506—8306—6 –17, dated Delhi, the 14th December 1917.

From—The Director-General, Indian Medical Service,
To—The Department of Revenue and Agriculture.

Reference this office unofficial note, dated the 5th July 1917, regarding a scheme suggested by Mr. Carter for the establishment of a medicinal plant garden in Simla. From the Forest Department noting, and from information received from the Madras Government, we are now in a better position to discuss the feasibility, or otherwise, of the scheme.

We now know that experiments are being conducted in the Madras Presidency, in the Punjab, and by Messrs. Smith, Stanistreet & Co., with a view to ascertaining what medicinal plants will, or will not, grow well in India.

For such experiment to be successful it appears in most cases essential that accessible ground should be available at altitudes varying from about 1,000 ft. to 8,000 ft. For purposes of supervision it is thought that the plots of ground selected should not be too widely separated.

It is doubtful if Simla is the most suitable site as it will be difficult to obtain the above conditions Darjeeling and the Nilgiris would probably be better.

Experiments are being conducted by the Government of Madras, chiefly in the Nilgiris, as to the possibility of the successful growth of a number of the trees and plants included in the list submitted by Mr. Carter; we also know that several of them are being successfully grown there.

It is probable, however, that the cultivation of certain trees and plants—natives of North-West America, Tibet, etc. require severer winter conditions than those present in the Nilgiris; these should, it is thought, be cultivated in the Himalayan ranges.

Of the trees and plants which it has been suggested might be experimented with the following may, for the present, be ruled out as the quantity of oil that could be extracted, and that used in India, is very small:—

(1) Juniperus communis L.

(2) Lavandula vera D. C.

(3) Rosmarinus officinalis L.

Gaultheria procumbens L, from the leaves of which oleum gaultheria (oil of wintergreen) is distilled is a native of North-West America and is also cultivated in Europe, but is not known to grow in India. The commonest Indian species is gaultheria fragrantissima which is indigenous to the Nilgiris.

This is being collected for the Medical Stores Depôt, Madras, as an experiment. The report as to whether oleum gaultheria can be distilleds from its leaves should be awaited.

Rhamnus purshianus D. C;

Hamamelis virginiana L;

Lobelia inflata L;

Euonymus atropurpureus, Jacq;

Prunus serotina, Ehrh;

are all natives of North America, and none of them are known to grow in India; might be experimentally grown in the Nilgiris.

Rheum officinale baill—is a native of Tibet and could probably be cultivated in the Himalayas; rheum emodi wall, or a closely allied species, is, however, said to be found growing wild near Simla and is very common in Garhwal and Kumaon. Samples of the root of this plant should be collected and sent to the Medical Stores Depôt, Madras, to see whether it would be an efficient substitute for rhubarb root, B. P.

Atropa belladonna—grows wild in Kashmir in large quantities; also grows in Tehri Garhwal. At our request this year five acres were added to the area already under cultivation

at the Kumaon Government Gardens, and the resulting crop (a good one) was purchased by us. It is suggested that the area under belladonna cultivation be extended next year to 15 or 20 acres at the Kumaon Gardens, Government to purchase the crop.

Atropa belladonna is also being grown at Darjeeling by Messrs. Smith, Stanistreet & Co.; it is suggested that it should be grown at the Government Gardens at Darjeeling. Also the area under cultivation in the Nilgiris should be extended.

There has been, since the outbreak of the war, a great scarcity of belladonna root and leaves in England as it is believed that large quantities were formerly imported from enemy countries.

As regards belladonna India should, undoubtedly, take up its cultivation on a large scale in order not only to meet all Indian requirements, but also to be in a position to meet the requirements of the United Kingdom.

Podophyllum emodi wall—grows wild in large quantities throughout Kashmir. Messrs. Smith, Stanistreet & Co., Calcutta, have secured the collecting rights for a part of Kashmir. This plant grows there in such large quantities that further cultivation in India is probably not necessary. Government should, however, secure the collecting rights of certain forests in Kashmir, and arrange to supply not only the Medical Stores Depôts in India, but also to export at least sufficient to meet all Government requirements in the United Kingdom.

Podophyllum emodi—is also common in Tehri Garhwal.

Aconitum napellus L.—is imported in large quantities from Tibet; could probably be successfully cultivated near Darjeeling or in Tehri Garhwal.

Digitalis purpurea—grows well in the Darjeeling District at about 6,000 ft., also in the Nilgiris. Its cultivation should be extended in the Government Gardens at both places to a sufficient extent to meet Government requirements.

Gentiana lutea (*Gentian*)—is being experimentally grown in the Nilgiris; its cultivation should also be tried at the Government Gardens at Darjeeling and at the Mussoorie Branch Garden of the Saharanpore Gardens.

Viburnum prunifolium L.
Colchicum antumnale L.
Polygala senega L.
} could be experimentally grown in the Nilgiris, Darjeeling, and Mussoorie.

Urginea scilla stein L—is said to grow in Bengal. Mr. Carter might be asked if he can give information as to its distribution.

The indigenous Indian urginea indica kunth is said to be an efficient substitute; samples should be collected and sent to be analysed by our Advisory Chemist at the Madras Medical Stores Depôt. It grows both in the plains of India and at an altitude of 6,000 ft.

Glycyrrhiza glabra—grows in Yorkshire; might be experimentally grown at Saharanpore and the Nilgiris.

Ipomoea purga (*jalap*)—grows well in the Nilgiris; the area under cultivation should be extended to meet our requirements also grows well at Ootacamund.

Hyoscyamus niger (*henbane*)—grows well at the Koilpatti Agricultural Station in Tinnevelly; the area under cultivation should be extended to meet our requirements; also grows well in the Ootacamund Gardens.

Psychotria ipecacuanha—grows at Kallar (1,000 ft.) in the Nilgiris; the area under cultivation should be extended to meet our requirements. Experiments in its cultivation should also be tried in Malabar and at the Cinchona Plantations, Bengal.

Eugenia caryophyllata (*cloves*) *and nutmegs.*—It is hardly necessary to cultivate these as they are readily obtainable in the open market.

Artemisia maritima (*santonin*)—should be experimentally grown in the Nilgiris.

Aloes socotrina (bitter aloes).
Anethum foeniculum (fennel).
} should be experimentally grown in the Nilgiris.

Citrullus colocynthis—grows in the Bombay Presidency; should be tried at Kallar.

Cassia augustifolia (*senna*)—is already largely exported from the Madras Presidency.

Chenopodium anthelminticum—is already growing well in Madras.

In undertaking experiments in the cultivation of these medicinal trees and plants it will be advisable that such experiments be undertaken by a staff which has a thorough practical knowledge of tree-and plant-growing, thus obviating failures and waste of money by unsuitable methods of cultivation.

It will also be wise to utilize the establishments and facilities already existing in the various provincial botanical and agri-horticultural gardens. It is thought that the original scheme of establishing a medicinal plant garden in Simla should not, therefore, be proceeded with, but that the superintendents of various Government gardens, including those at Darjeeling, Kumaon, Mussoorie, Saharanpore, Ootacamund, and Kallar, be circularized and asked their views as to the advisability of undertaking experiments in the cultivation of such of the above-named plants as are not known to grow already in abundance in India.

An organized effort should be made for the collection and supply to Medical Stores Depôts of a sufficient quantity to meet their annual requirements of such plants as are known already to grow well in India, Kashmir or the Himalayas.

U. O. I. No. 16—1460—1—18, dated the 28th February 1918.

Reference this office unofficial note No. 506—8306—6—17, dated the 14th December 1917, the following additional information has since been ascertained :—

Podophyllum emodi wall.—We have ascertained that Messrs. Smith, Stanistreet & Co. have contracted with the Kashmir State Forest Department to take over the whole output of the Kashmir forests for a period of five years, commencing with the 1917 autumn collections, and are arranging to manufacture podophyllum resin in Calcutta.

This firm has also acquired the total output of the Chamba State for the next two years.

This plant also grows extensively in Sikkim, and a private Calcutta firm has asked the Maharaja for permission to purchase the whole crop.

It also grows in Hasan Abdal in the Rawalpindi District.

Aconitum napellus.—The true napellus variety does not appear to grow in the Himalayas all the roots obtained being those of varieties of aconitum ferox (spicata principally). This latter is the most common Nepal variety, and is unsuitable for the manufacture of tincture, but excellent for the manufacture of the liniment; a Calcutta firm has offered to buy all the aconitum ferox in Sikkim.

Glycyrrhiza glabra.—It should be possible to obtain this from Mesopotamia; the presence of a Liquorice Factory at Kut indicates that the root is probably grown in considerable quantities there. It is also obtainable commercially in large quantities from China.

Hyoscyamus niger (henbane)—mentioned in the note is also grown at Saharanpore. It was cultivated formerly at the Saharanpore Government Gardens but they have, it is believed, discontinued growing it as a local firm (The Emerald Fruit Gardens) undertook to cultivate.

No mention was made of hyoscyamus muticus which, in the past, has been the principal source from which atropine has been derived. This was formerly procured from Egypt and the Sudan but grows wild in the Northern Punjab. A small quantity of Indian hyoscyamus sent to England in 1916 proved to be of fair average quality but suffered from the usual complaint regarding Indian herbs, *viz.*, careless collection and assortment.

The Agricultural College at Lyallpur proposed experimental cultivation on a large scale in 1916, but this fell through.

Dr. Carter has arranged for a small experimental growing in Bhagalpur and elsewhere in Bengal, and the Madras Agricultural Department has three acres now under cultivation in the Madura District the result of which will be ascertainable in May or June of this year.

Prior to the war the value of this article, free on board Alexandria, varied from £16 to £18 per ton, but lately the price in London has averaged from £50 to £56 per ton, while in 1916 as much as £90 per ton was paid for it.

Psychotria ipecacuanha—is also being grown experimentally at the Government Cinchona Plantations at Maung Poo. Samples have been sent to England, and have been reported on as approximately intermediate in value between the best Brazilian and Carthagena ipecacuanha. It also grows well at Johore in the Malay States.

Artemesia maritima (santonin).—As far as is known Russian Turkistan is the only source of supply, this being a Russian Government monopoly.

Citrullus colocynthis—also grows in the Rawalpindi District and near Cocanada; samples have proved of good quality.

Lycopodium—grows wild in the Darjeeling and Sikkim forests and probably elsewhere throughout the Himalayan ranges. Samples were collected last year by a private firm, approved of in England, and arrangements are being made for collection on a large scale in 1918.

Urginea scilla, steinh L.—The indigenous Indian squill grows wild in large quantities on the beach in Salsette (just outside Bombay) and is collected, sliced, and exposed to the sun.

This is being used at our Bombay Depôt for the manufacture of tincture and powder.

U. O. I.—No. 16—378—1—18, dated the 16th January 1918.

I agree with the view expressed in Colonel Gage's note, dated the 1st January 1918, that this scheme for the extension of the cultivation of the medicinal plants in India should be entrusted to the Cinchona Departments, as ample lands, at varying altitudes and latitudes, are at their disposal.

I am of opinion, however, that the Cinchona Department should, for the present, be asked only to undertake to supply to the Medical Stores Depôts their requirements of the root, bark, leaves, fruit, seeds, etc., of the various plants grown; the actual manufacture of the medicinal preparations therefrom should be carried out at our manufacturing Medical

Stores Depôts at Madras, Bombay, and Lahore, where the necessary machinery and technical knowledge are available. As regards the list of medicinal plants to be grown it is suggested that cultivation of all those mentioned in this office note, dated the 14th December 1917, should be experimented with in the first place; it is probable that additions will be made to this list later on.

The Medical Stores Department of this office are prepared to furnish Colonel Gage with any information he requires as to the portion of the various plants, *viz.*, root, bark, leaf, etc., used; also annual requirements in each case.

If the work, as now proposed, be taken over by the Cinchona Departments, it is suggested that the various Provincial Governments, such as Madras and the Punjab, be kept fully informed as to what is being done. It is known that both the above Governments have undertaken investigations in this direction, and it would appear desirable that all future efforts *should be co-ordinated*, and should eventually be centralized, in some one Department of the Government of India, preferably the Department of Revenue and Agriculture.

No. 342—6271——17, dated Simla, the 12th September 1917.

From—The Director-General, Indian Medical Service,

To—The Secretary, Indian Munitions Board.

(Through the Secretary to the Government of India, Department of Commerce and Industry, Simla.)

I have the honour to forward herewith, for information, a copy of a letter No. 3636-E. S., dated 20th August 1917, from the Director, Central Research Institute, Kasauli, and to state that I consider that the whole question of glass industry in India is one to be taken up by either the Department of Commerce and Industry or the Indian Munitions Board.

2. Such an industry should be liberally financed by Government and a couple of glass experts should be imported to train Indians; our requirements are only a small part of such a scheme but, up to now, it has been necessary to import all superior kinds of glassware. As it is, we cannot depend upon either the Allahabad firm or the Ambala Glass Works.

3. It is quite time that the manufacture of various kinds of glassware in India was taken up by some Government Department.

4. There is no doubt that, as a business proposition, the undertaking would financially be a success. If a small one, man Indian firm like the Upper India Glass Works, Ambala City, with their rudimentary appliances can make such good glassware *viz.*, Petri dishes, flasks, test tubes, glass tubing, etc., as we have received from them, there is little doubt that a Government subsidised buisness could effect excellent results.

(*Witness did not give oral evidence.*)

WITNESS No. 481. *Mr. E. Marsden.*

MR. EDWARD MARSDEN, *Indian Forest Service, Silviculturist at the Forest Research Institute, Dehra Dun.*

WRITTEN EVIDENCE.

The introduction of mechanical export in forests depends upon either (1) certain individual trees being of great value, or (2) the big trees being concentrated within a limited area, or (3) the majority of the trees being of valuable kinds. In the North-West Himalayas, where the trees grow gregariously in pure forests, the stems of marketable size are not infrequently dispersed widely amongst smaller trees of all ages. The problem of replacing these irregular forests by blocks containing trees of uniform size is being tackled; the existing forest has to be removed, and the fellings have to be regulated so as to produce conditions of moisture, light, shelter, and soil which will favour the establishment of seedlings springing up naturally from the seed of the old trees. Definite progress has been made, particularly in Kulu, but it is clear that a study of the demands made by the seedling upon the physical factors mentioned must precede any such attempts on a large scale. This work demands concentrated and continuous study on the spot; Divisional Forest Officers cannot give the time necessary. In such forests a knowledge of the methods to be adopted in order to guarantee successful natural regeneration is the essential preliminary to all sound administration, and there should be in every province at least one specialist detailed for this.

In his evidence before the Industrial Commission Mr. H. Thompson, Financial Commissioner, Burma, said that the chief criticism of the forest Department was directed against its commercial aspect. There are numbers of business men in India, and of these a considerable proportion is interested commercially in forest products. If the scientific men in India formed an equally strong body, and if some of them depended upon the forests for their livelihood, I think there would be at least as much criticism directed against the scientific management of the forests. I should like to emphasize, this point because, in my opinion, the methods of the Forest Department are too conservative, and not nearly enough attention is paid to experiments in new silvicultural systems of management. Compared with the

attention devoted to the realization of immediate revenue, to improved transport, to the development of new markets, to the stimulation of forest industries, etc., there is no doubt this aspect has been gravely neglected. All such efforts are futile unless the supply of the raw product can be guaranteed continuously, regularly, and of a non-fluctuating standard. This depends, on a knowledge of the trees, of their reproduction, of their rate of growth, and of the best methods to be applied in thinning, tending, and protection generally. Silvicultural knowledge is, in fact, the foundation of successful forest management.

When considering the tropical forests of India conditions are very different from those of the North-West Himalayas. The tropical woods form a reserve whose value has not been appreciated. The Reconstruction Committee at Home, when passing in review the sources from which a supply of timber might be drawn to repair the damage done by the war in England, Belgium, and France concluded that only Canada and Russia could provide the material; *India being already an importing country was dismissed as negligible.* The fact is that India could supply from her tropical forests all the timber wanted, and that the opportunity now available of selling profitably all sorts of timber presents the finest chance India has ever had, or is likely to have, of introducing sound silvicultural methods in the tropical forests and of developing new methods of concentrated extraction on a large scale. In gregarious forests it is possible to produce conditions which will favour the establishment of seedlings; but in mixed forests where 200 or 300 species may occur per square mile it is not possible to produce conditions which will favour the seedlings of one or two species (valuable trees) to the exclusion of all others. Hence, natural regeneration with the object of forming blocks containing uniform trees of one species is out of place in the tropics. We must have recourse to plantations; but before starting it is necessary to acquire some knowledge of the climatic and edaphic demands made by the trees we propose to introduce, of the best methods to be adopted in sowing or planting, and of how, subsequently, to tend the crop. It seems advisable to stress the fact that one cannot suddenly take action and start a plantation anywhere. In clearing the existing tropical forest to make way for plantations the best chance of economic working is the introduction of a scheme on the largest possible scale based on the concentrated exploitation of all species. If one square mile of tropical forest is cleared there is difficulty in disposing of the varieties of timber obtained from 200 different kinds of trees; but if a thousand blocks of 500 acres each, distributed judiciously amongst the tropical forests of Burma, Assam, and Madras were cleared the timbers could be classified, and there would be considerable quantities of each kind. The general opinion that the building trade of the United Kingdom prefers soft wood to hard wood has no real foundation; soft woods are used because they are cheap. If scantlings for building were standardized they could be turned out in bulk at conversion-centres in the forests. Labour is cheaper in India than in Europe. The concentrated extraction of all species on a large scale is the key-note of the whole scheme. A stimulus has long been lacking to set the timber trade of India on its legs; extraction on this scale once started will mean practically the development of new industries; and once embarked on the new venture it is unlikely that firms will revert to the antiquated methods of the present day. Among the first steps needed would be the provision of a large staff of forest engineers, surveyors for the railways (which should be permanent lines), labour-recruiting officers, and a few silviculturists supervising on the spot the formation of plantations.

In deciding with what species to reafforest the cleared areas the obvious step is to raise valuable trees like teak and rosewood. But it seems to me that further consideration is wanted. These hard woods take 80 or 100 years to mature. Throughout this long period not only are they open to danger from fire, insects, and fungi, but the return on the money invested in their production is deferred, and the plantations not yet mature represent a very large working capital. A timber-crop which could be realized at an earlier age, say 25 years, would be worth consideration even if the value of the wood were a good deal less. Assuming a rate of 4 per cent compound interest the present value of one thousand c. ft. of timber, worth Rs. 5 per c. ft., to be realized after 100 years and thereafter every 100 years, is Rs. 101. The present value of one thousand cubic feet of timber worth annas 3 per c. ft. to be realized after 25 years and thereafter every 25 years, is Rs. 112. The specially favourable condition for growth which these tropical forests enjoy is the hot, damp climate. To utilize fully this favourable condition we should cultivate trees which can take advantage of it. The kind of tree which responds best to a hot, damp climate by extreme rapidity of growth produces wood either soft, or only moderately hard; not generally considered valuable. Such trees are, amongst others, *Anthocephalus cadamba, Duabanga sonneratioides, Terminalia myriocarpa, Gmelina arborea,* and *Bombax malabaricum.* There is already a demand for wood to make tea-boxes, packing-cases, matches, pulp, light furniture, and especially ply-wood (Venesta), which has to be imported from Japan and elsewhere, and which there is reason to believe will increase rapidly. And there seems little doubt that, given the conditions of continuity in supply and good communications, a satisfactory price could be obtained for soft woods grown concentrated in pure plantations of fair size.

Further surveys of the extent to which certain trees occur are not wanted; it would be better by experimental research to discover how to concentrate these trees within smaller areas.

Technological Institutes.

It seems likely that after the war increased competition, arising as a result of industrial expansion, will lead to a demand for more exact knowledge. This will be translated into the erection of technological institutes and museums. It would appear prudent to prepare for this

eventuality by the formation of a small imperial staff of technological architects who would plan the construction of such institutes on sound lines and who might be employed also on the building of Government demonstration or pioneer factories. There are now very few men in India competent to design a factory, museum, or institute.

Co-ordination of research.

It is essential that silvicultural research should be centralized in order to prevent duplication or overlapping and to distribute the work in localities where it can best be carried out. For statistical research in the rate of growth and development of forest crops it is obvious that the methods adopted for the collection of data must be identical in order to render them comparative. Centralized control by one chief is liable to the drawbacks inseparable from individual control: prejudice in favour of one branch, slackness, conservatism, and personal domination. Control by a board is preferable; for silvicultural research the existing Board of Forestry would form a suitable body to control the allocation of work and the methods to be adopted. Annual meetings of all silviculturists would decide minor points. In no case should the risk be admitted of equally powerful and independent research institutes setting up rival methods of procedure, whether experimental or statistical the essence of research work is that it should be comparative.

Early action is desirable on:—

(*i*) The forests in which concentrated exploitation on a large scale should be started.

(*ii*) Experiments in sowing and planting on the spot.

(*iii*) Preliminary surveys for railways.

(*iv*) Recruitment of labour.

(*v*) Engaging experienced lumber-engineers.

(*vi*) Classification and standardization of outturn.

(*Witness did not give oral evidence.*)

WITNESS No. 482.

MR. PURAN SINGH, F.C.S., *Chemical Adviser to the Forest Research Institute and College, Dehra Dun.* *Mr. Puran Singh.*

WRITTEN EVIDENCE.*

The main objects in thus placing my views before the Commission are to indicate to the best of my ability—

(1) Principles underlying the successful industrial development of Japan and the lessons to be learnt therefrom in their application to India.

(2) Defects in the present system of co-ordination of scientific research and industrial development in this country.

(3) Suggestions for the future development of industries and organization of scientific research.

Before embarking upon the subject matter of this paper it is necessary to give a brief outline indicating my qualifications for the expression of certain views and for venturing to suggest the study and adoption in India of methods that have proved eminently successful in the industrial development of such a country as Japan.

I was trained in the Tokio Imperial University for about three years and spent a year acquainting myself with the industrial life of Japan. While working in the Osaka Pharmacentical Works I introduced the manufacture of citric acid as an additional item of manufacture and underwent a complete course of the various processes for pharmacopœial preparations. For some time I was in the Shinagawa India Rubber Works, where I learnt all the processes of the manufacture of rubber goods. I have visited all the important factories and industrial centres of Japan and have inspected a number of copper and coal mines, the great iron works near Moji, sulphuric acid and chemical factories, camphor and peppermint manufacture, leather tanning, wood-tar and turpentine distillation, paper factories, and minor industries such as matches, umbrellas, needles, soap, dyeing works, cement, pottery, and glass works. I came into close association with the best scientific minds of Japan and was accorded free access to all factories and workshops. Returning to this country in 1905 I was offered, in 1907, the post of organizing the chemical laboratory and initiating forest research work in chemistry at the Forest Research Institute, Dehra Dun. Given this good opportunity I have, since that date, been studying the technical aspects of the chemistry of forest products and have now a chemical laboratory well fitted up for this purpose. The nature of my work has enabled me to observe the various systems of organizing scientific research, and I have had the opportunity of meeting a number of scientific experts with many of whom

* This paper embodies the private views of an individual only, and should not be taken as representative of the views of the institute or service with which his official work is associated.

I have a very cordial relationship. I must admit that I occupy a post of minor importance at the Research Institute as from the very nature of my work I can but act as an Assistant or Consultant to other research officers. In spite of this, however, I have managed to prosecute a number of original investigations and have kept in close touch with the industrial development of this country. I trust, therefore, that, having thus obtained a first-hand knowledge of industrial Japan, it is not presumption on my part to give a brief outline of the factors which influenced the development of that country, and to deduce therefrom ideas for the future progress and welfare of India.

I.—The industrial development of Japan and lessons to be learnt therefrom.

In Japan, which was modelled on the pattern of industrial Germany, the organization of the scientific education of the people, including industrial and scientific research, was undertaken simultaneously with the wholesale transplantation, if I may use such a term, of the industrial talent of other countries by importing the latter's mature industrial experience and technical knowledge in the form of their leading experts. Japan did not wait for the birth of industry by means of the gradual inculcation of an expert knowledge into their own people by a methodical training based on the resources of their own research work. The principle was fully recognized that scientific and industrial research is not an essential preliminary to industrial development and progress. The Japanese obtained the services of the best engineers, chemists, or business-men obtainable in order to make a success of their industries. Model factories were erected by Government and private agency to become, in many cases, splendid failures. But such failures proved the means of education of the masses and enabled the small man to succeed where greater intellects and greater men had actually failed. Glass industries are a case in point; those who first invested their money in glass lost hundreds and thousands, and the workmen thus trained became masters of millions. I met a man who started life as a glass-blower on a few pice a day in the same factory of which he subsequently became the owner. Government started a window-glass factory in Shinagawa, the ruins of which I have myself seen. Though directed by American and Austrian artisans the enterprise collapsed, but the people learnt the art and the industry became a flourishing one. Take, again, the case of the iron works at Moji. Though at the time of the establishment of this gigantic factory Japanese training in metallurgy was perfect, and clever engineers and chemists were available in scores, yet it was German and Austrian engineers and foremen who were placed in charge. The Japanese contracted with the engineering firms who supplied the machinery that they should train eight or ten Japanese engineers in the manufacture of steel. In spite of the fact that iron is imported from China yet they have made the industry a brilliant success, which is now entirely in the hands of Japanese engineers.

Industries were so well organized that they proved the best training-ground for the science students of Tokio University studying mining and metallurgy, and there was an intimate relation existing between the University and industrial concerns.

As in the case of Japan it will be noticed that such industries which have come to stay in this country have originated by a similar process. The industrial education derived from the establishment of such factories as the Cawnpore tanneries can be obtained in no other way, and cannot be in any way replaced by the well-intentioned labours of a dozen Directors of Industries. The success achieved by the Cawnpore tanneries was obtained by bringing over a portion of England to India. Similarly, a second Manchester has sprung up in Bombay, and Swindons in miniature can be seen in the railway workshops all over the country while illiterate *mistris* thereby acquire a remarkable knowledge of construction and design of machinery.

Again, the iron industry has been under the consideration of Government for more than 50 years. Mr. Schwarz, who was an expert iron metallurgist from, I believe, Sweden, was invited by Government to come over to this country. His illuminating reports and much preliminary work at the hands of others led to nothing, and it was not until the problem was tackled in a businesslike way, by making a preliminary economic survey and thereafter, through the famous enterprise of the Tatas, by the wholesale transplantation of some of the expert steel-makers of the world, that the initiatory stimulus for steel-making in India on the modern gigantic scale was received from America and, hence, Tata's Iron Works may be said to represent America in India.

No doubt, indigenous industries will also gradually improve by knowledge acquired from outside and the skill of foreign countries will permeate the conservative intellect of the indigenous artisan.

My object in thus citing the above cases is to lend emphasis to my point that the real development of industries cannot be attained by any amount of organization of research nor by the creation of such posts as Directors of Industries, Directors-General of Agriculture, Chemistry, Metallurgy, etc. The life nucleus of industry round which growth takes place must spring from its natural source of origin and cannot arise as a product of local education and general research. General research, it is true, may give us new nuclei in the laboratory but, in the case of a country which is otherwise in a backward state of industrial development, the small laboratory nuclei of wonderful discoveries usually fail to develop and die unrecognized. It may safely be said that the remarkable discoveries made by research workers in Germany on such subjects as, to quote a few instances only, the contact process

of sulphuric acid manufacture, synthesis of indigo, and the preparation of many coal-tar products in general have been achieved through the stimulus of the high state of the development of chemical industry. This brings me to my point that *it is only when industry has reached a certain stage of development in a country that the mutual reaction of that industry on scientific research and of scientific research on industry comes into full play.* The industrial development of the resources of any country must be, in my opinion, the fruit of enormous losses and failures. I would urge that the first and most important step in the industrial development of this country is the establishment of *model factories*, rather than the organization of scientific education and research as an essential preliminary. The latter are, no doubt, necessary, and the necessity for them will arise as the industries themselves develop. In conjunction with the establishment of factories it will be necessary to secure the services of the best experts in the various industries. The selection of such experts should not be limited to one country, but based on the Japanese principle. The expert for any one industry should be sought for in that country in which that particular industry has been developed to the greatest advantage.

Before making more definite proposals in this connection it is necessary to indicate the more obvious defects of our present system of organization of industrial and scientific research and to discuss some possible remedies.

II.—Defects in the present system of scientific research and industrial development.

1. General.

It is, doubtless, easy to find fault with any new system of organization and, in making what may be considered to be "sweeping assertions", I am aware that I am laying myself open to criticism. I am, however, prepared to face this and my only desire is to offer my opinion for whatever it may be worth. I cannot claim to be able to solve the difficulty, as the conditions of this country are peculiar, but I make no statement in this paper that cannot be substantiated by facts or specific examples, if need be, and shall, in a subsequent section, endeavour to outline a system, the adoption of which would eliminate some, at least, of the defects of our present organization. Dealing first with the organization of scientific research in this country it is no exaggeration to say that in no other country is scientific research, whether pure or applied, separated from the academic atmosphere of a University or a Polytechnic. It is true that, for certain reasons, Universities as centres for research have proved failures in India, but this is no reason for fostering the rapid growth of independent centres of research, official and otherwise, throughout the country. My first point, therefore, is that officialized research, the outcome of Government control, is unsatisfactory. No institute in India, be it run by Government or by a public fund, can, in my opinion, work to its full efficiency under the present system of control. The reasons for this are:—

(1) Government being in charge of the official administration of the country cannot command that open and personal affection of the people at large which is common to the Universities. The Universities are the *Alma Mater* of the rising generation and, thus, the latter have a personal affection for the temple whence they derive the light of knowledge. For this reason, scientific and industrial research, when carried on by Government departments, does not become as popular as it would do if it were associated with the Universities.

(2) The work of the University Professor, unlike that of the Government official, is open to public criticism and valuation not only at the hands of laymen, but before the other Universities of the world. This accounts for the high standard of University work, a standard which it is the pride of the Professor to maintain not only for the sake of his own good name, but for the reputation of the University to which he belongs. A Government official, on the other hand, has to keep a limited circle satisfied with his work and, his reputation, when once made in that circle, runs little risk of being marred, as he is safe under the protection of his official seat.

(3) Up to this time, in no country which encourages scientific, research, has it been possible for anyone to aspire to the dignity of a Professor of a University without having first risen through the ranks of student and assistant. On the other hand, in this country we see young men fresh from Universities appointed direct to responsible positions of research and educational work, and the stimulus for ever-increasing effort is, in most cases, lacking.

(4) Research work by the agency of a Government department, as such, does not carry sufficient weight with the scientific bodies of the world. To take one example here, *viz.*, that of the Department of Agriculture, United States of America, the only department of its kind which is run by Government agency, it is a fact that, though the work done by this department is of a high order, yet it does not command that international respect which should be its due.

(5) Research is the highest form of education and, as such, it should be directed with the sole object of educating the people. This being the proper function of the Universities the research officer should be in the nature of a democratic

public man, rather than a Government official who is bound to become, by the very nature of his environment, somewhat of an autocrat.

(6) Many public research institutes that have recently sprung up in this country indicate a desire on the part of the people to be rid of official control in order to carry on research as independently as is at present done in the Universities of other countries. Though the desire is thus indicated yet all work in this direction is waste of energy if there exists no clearly defined and harmonious co-operation between Government and these private institutes. Such institutes are bound to starve finally through the lack of the University atmosphere and the authority and resources, as distinct from control, of Government at their back, just as the Universities of Tokio and Kyoto have both the Government, and through the Government the people, at their back.

(7) Education when given in colleges run by a Government department such as those of Agriculture and Forests, as distinguished from colleges affiliated to Universities, does not tend to efficiency. The teacher therein is neither properly responsible to the students and the public, nor to Government. This is because Government has no means of judging the ability of the Professor as such. The fact that no Government selection till now has proved a failure in research or in imparting scientific education is due to Government having unwittingly lent to them an authority and position which causes men of average attainments to appear as geniuses.

(8) And, lastly, it is a fact that no country in the world has followed the procedure adopted in this country for organizing scientific and industrial research. This point is well illustrated in a recent number of "Nature" by Mr. Hugh Robert Mill in reviewing "A Note on an Enquiry by the Government of India into the relations between Forests and Atmospheric and Soil Moisture":—

He says:—"To our mind the method adopted could produce no better result than it appears to have done. In a scientific problem, such as was set forth, the only function of the State seems to us to be to decide that such an enquiry shall be carried out at the public expense, and that every facility for obtaining data shall be given by all the departments and all the Government concerns, local and central. It should then be handed over to a competent man of science, set free from all other duties and supplied with necessary systems. His report, when complete, would be athoritative and epoch-making, if not final, and, incidentally, his own reputation would be made or marred by his handling of the facts. The total expense would probably be no greater, and the labour of many public servants would not be diverted from the work for which they were trained."

This comment emphasizes exactly the point I am attempting to bring to your notice, *viz.*, that scientific research must be independent and in the hands of the best possible men. I know, under present conditions, that scientific research cannot be very well affiliated with the Indian Universities, whose graduates are at present received by the foreign Universities as matriculates only, a fact which shows that the standard of scientific education in Indian Universities is very low.

The remedy for this appears to be either to associate the scientific and industrial research in this country with a new University of Science or, failing that, to create a Science Council, with authority to direct and control all scientific work in India.

2. Lack of control.

Another defect intimately connected with the last-mentioned is the absence of qualified control to direct the general lines of research. There is no proper check on the work of research workers due, no doubt, to the fact that the existing centres of research are not connected with the University or a Supreme Science Council, the result being that, in the name of research, or in the name of industrial development, Government very often lends a considerate ear to ill-considered schemes of enthusiastic amateurs, or is sometimes misled by plausible arguments of concession-hunters. Such lack of control also leads to the pernicious system of what I must term, for lack of a better expression, "Landlordism of Research", under which credit is taken by one for work done by another, in many cases by men who know little more about their subject than their subordinates who, being in a subordinate position, are unable to protest.

Numerous examples may be quoted to show the inadequacy of control. How often has it happened that a new Government post has been created and much money spent and the post finally abolished? In other cases the holders of certain posts are compelled to justify their existence by issuing reports which, in many cases, are faked and of a misleading nature. It is not Government that is responsible for such mistakes, but the fact that no properly qualified Advisory Council exists to control the general lines of policy. By way of an example I may perhaps be excused for citing an instance in which I have been personally connected. Some years ago I was sent to report on the Rangoon Tannin Extract Factory and to investigate the causes of its failure. As a result it was decided that the matter should be enquired into further by a specialist, who would study and start the tannin extract industry in the country, and, after much delay, a Government tannin Expert was appointed. However, on his arrival a strong case was put up to Government in which the main object for his appointment seems to have been lost sight of and, a-

a result, his services were directed to an ambitious project of research work of a different nature. I am convinced that, had this expert been permitted to prosecute the enquiry for which he was originally appointed, we should have seen at least three or four tannin extract factories working in the country and actually supplying tanning materials in the form of extracts to the United Kingdom. I make this statement in the full knowledge that there is a prevalent idea that it is the manufacture of leather itself which should enlist our efforts at the present time, rather than the manufacture of tannin extracts. In support of my opinion I may mention that I have now a report from Singapore which states that the people are at present making crude mangrove tannin extract without the aid of vacuum pans and selling it by tons to Japan at remunerative rates. This lends emphasis to my point that research work is not subjected to adequate qualified control. By this I mean that, failing the foundation of a Science University, not only results, but also programmes of research work should receive an exhaustive scrutiny at the hands of a Science Council for the whole of India as already proposed.

3. *Lack of co-operation between the existing institutes.*

There are now a number of institutes dealing with the various branches of science in India, and I think it is true to say that co-operation or intercommunication between them does not exist. It is tolerably certain that under such conditions in some branches, particularly in those connected with chemistry, there is bound to be considerable overlapping of work. One institute may be engaged on working up a subject in entire ignorance of what data may be already available elsewhere. Another result is that the public are uncertain where information on any particular subject can best be sought and, what is worst of all, a kind of "expert jealousy" arises between these various centres, causing a tendency to secrecy in divulging the results of research, a feature that is entirely foreign to true scientific research, and which, moreover, would be quite impossible were all such work carried out under the control of a University. Here, again, therefore, it is a fountain head of control that is needed to neutralize existing defects.

4. *Recruitment and personnel.*

To be quite frank it is my opinion that, under the existing system of recruitment, we do not obtain scientists of the best type in this country, and the good men that do come, by the exigencies of Government control under which they find themselves, gradually lose much of their initiative and personal inclinations for scientific study and rapidly sink to the level of the official autocrat. What we require, in my opinion, is men of ripe experience, nominated by Universities, who would be placed in charge of the various branches of science in this country and their appointment, promotion, or dismissal must be entirely in the hands of the said Council of Science in India.

III.—Suggestions for the future development of industries and organization of scientific research.

In the preceding section I have attempted to express a frank opinion on the defects of the present system, making a few suggestions for possible improvement. I now propose to put these suggestions into definite shape and so give my ideas for taking immediate and practical steps to develop the industrial resources of the country and to organize scientific research on a sound basis. In doing so, I am aware that I may be considered an idealist or a dreamer, but, should a few only of such proposals be held worthy of consideration, I shall feel that my object has been attained, and I shall feel amply compensated for any adverse criticism that my temerity in criticizing existing institutions may call forth.

Taking the question of industrial development I venture to propose :—

(1) The formation of a strong industrial syndicate, with a capital of some ten crores, which should include in its directorate the best business men, representatives of the leading manufacturing firms of India and England. The work of this syndicate should be to select suitable localities and make a start by importing the required machinery for experimental factories for the utilization of Indian raw materials that have not been developed either at all, or at any rate not to their full extent. Such a syndicate would arrange for the services of engineers and expert manufacturers that may be required and generally control finances. If it were possible to start such a syndicate I should say from my personal experience of the embryo industries of the country that they could proceed at once to start factories for the following industries without the necessity of any protracted preliminary research to aid them :—

(*a*) Manufacture of essential oils of all kinds and perfumes, together with extensive and regular cultivation of the raw materials required. For example, Rosha Grass Oil, Khaskhas Oil, Ajwani Oil, Wintergreen Oil, Eucalptus Oil, Geranium Oil, and oils of Skimmia, Costus, Calamus, Lemon, Rose, Kewra, and Bed-mushk. Among the oleo-resins let me mention turpentine, especially in Burma, Boswellia, and Wood Oils of Dipterocarp species.

(*b*) Manufacture of all British Pharmacopœial drug preparations in the form of powders, tinctures, extracts, together with an extensive and regular drug plantations, with the object of securing a regular supply and standard quality of all raw materials.

(*c*) Manufacture of alkaloids in general, such as opium alkaloids, strychnine and brucine from nux vomica, atropine from datura belladonna, together with a regular and extensive cultivation of such raw materials.

(*d*) Manufacture of alcohol, ether, and other solvents.

(*e*) The immediate erection of at least three tannin extract factories, each with a capacity of 10 tons per day, for myrabolans tan extracts and those of mangrove and other mixed tan materials.

(*f*) Manufacture of chemicals; acids such as sulphuric, hydrochloric, and nitric; alkalies, such as ammonia from coal-tar, caustic soda from salt, and caustic potash, etc.; and salts such as those of potassium, manganese, chromium, magnesium; organic chemicals such as benzol, aniline, naphthalene, phenol, and creosote oils from coal-tar distillation; manufacture of acetates, acetic acid, wood alcohol, Stockholm and wood-tar, etc., from destructive distillation of wood.

(*g*) Antiseptic treatment of timber.

(*h*) Manufacture of paper and pulp.

(*i*) Leather and leather goods.

(*j*) Fruit preservation and fruit cultivation.

(*k*) Fat and oil extraction industry, in conjuction with glycerine and candle factories.

(*l*) Glass, enamels, pottery, tiles, and cement manufacture, with which may be combined the metal-cutting industry for the manufacture of enamelled ware.

(*m*) Paints and varnishes.

The proposed syndicate could, in my opinion, start with at least 50 large experimental concerns at once.

(2) The handing over of successful concerns for further development to limited companies started for each of such successful industries, which should be bound to the parent syndicate by the contribution of a quota of their profits or by some similar arrangement.

(3) The syndicate should work in harmonious co-operation with Government who would help in every possible way to further definite proposals formulated by the syndicate by opening up that portion of the country proposed for exploitation by building roads, railways, irrigation canals, by making free grants of land for cultivation purposes, by the reduction of railway and shipping freights for raw materials and finished products, and by permitting the syndicate access to all available data and information on any particular subject.

(4) That Government will employ this syndicate as their consulting expert for an industrial scheme submitted to them for concession, and no experimental work for the industrial development of the country should be undertaken by Government without its advice, and through its agency.

(5) The syndicate should enlist the services of experts from America, England, France, India, and elsewhere to carry out an economic survey of the resources of the country for exploitation.

(6) Government should not distribute bounties to private commercial firms in the name of industrial development except in such exceptional cases as may be recommended by the syndicate.

(7) Such posts as Director of Industries, as constituted at present, appear to be more a hindrance than a help to industrial progress. It is unreasonable to expect officers from the Civil Service or even business men to administer such posts successfully. The Directors of Industries, if required, should be technological engineers, with duties of disseminating information regarding the raw materials available and the localities of occurrence. They would, as a consequence, work in close co-operation with the syndicate, helping the latter in its economic surveys.

(8) The industrial department of Government working in close co-operation with the syndicate should be Imperial and, under no circumstances, Provincial. There should be no decentralization of research or industrial organization on the part of Government. The whole country should be bound together in one large network, radiating from one centre. All expenses must be borne by the Imperial Government. This will be the case for at least the next thirty years, after which period it may appear desirable to decentralize.

(9) Under no circumstances should any factories be started by Government agency, and such as are at present in the hands of Government should be immediately handed over to the syndicate proposed, whose duty will then be to further the development of such industries.

Coming now to the allied question of the organization of scientific research I have to offer the following suggestions:—

1. All science departments of Government, such as the Geological Survey, Botanical Survey, Zoological Survey (except perhaps the Trignometrical Survey), the Forest Research Institute, all Provincial Agricultural and Forest Colleges, and similar private Research Institutes that might wish to come in, such as the Bengal Institute of Science, the Bangalore Indian Institute of Science, Professor Bose's Research Institute, could well be brought under one supreme organization akin to that of the Tokio and Kyoto Universities of Japan. Each section should be directed by one or two specialists in their line, who should possess an international scientific reputation and must be of ripe age and of wide experience. Each officer in his special subject must be a free man, and his activity should not be restricted by any set of red-tape rules and regulations that often defeat the very purpose for which they are framed.

2. The existing staff of the various departments, as available at present, may constitute the staff for such an organization, but it is essential that such a staff be strengthened by the addition of men of high qualifications, men of whom their own country might well be proud to send as representatives of national genius to this country.

3. Official authority in their respective subjects should be vested in the heads of the various scientific sections engaged in research work, who should be given an opportunity of making special world tours with the object of keeping themselves up to date in their respective subjects.

4. The future recruitment of the scientific departments should not be made to the prejudice of any one race or creed, but with the sole object of obtaining the very best men for the various posts; for it is quite obvious that, under the present system of recruitment, such ideals are not attained. In this connection, I may be permitted to quote here the following from the "Memorandum on the Reorganisation of Scientific Research Institutions of the United States of America" by Jerrald Lightfoot, M. A., S. S., presented to the Parliament of the Commonwealth of Australia, and published in 1916:—

"*10. Experience of institute in problems of organization.*

The experience of the institute in regard to research work is that the best method is to map out a field in which the more pressing problems arise, then to obtain the best man available in each branch and to allow him to associate with himself assistants and collaborators and attack the problems in such a way as he may think fit. All that is necessary in the way of supervision is that some broad policy should be agreed upon, *i.e.*, as to the general lines of the work and the most important problems, the solution of which is considered feasible in view of the existing state of scientific knowledge. Having decided these broad lines of policy it is best to allow the persons selected for the research to work the problems out in any way and at such times as they like. It is quite probable, for example, that in attacking some one problem discoveries may be made which will lead directly to the solution of some other allied problem. In the Rockefeller Institute the greatest freedom is allowed to the members in charge of the various laboratories. They know what it is desired to accomplish, but whether to pursue any particular line, or to continue in that line, is left to their discretion. Two things are considered essential in research work—*viz.*:—

(*a*) to secure the best men available to undertake the research work, and to allow these men to choose their own associates; and

(*b*) to give the men appointed the greatest freedom in the prosecution of their researches.

Public pressure is frequently brought to bear upon the Rockefeller Institute to solve particular problems, but the question as to which problems are to be investigated must depend very largely on the state and progress of knowledge in the particular branch of science involved. For example, the institute has often been asked to investigate "hay-fever", but they have refused, as they see at present no likelihood of solving the problem.

In regard to the separation of research from instructional work the experience is that the best teachers are undoubtedly those who do research work, but it does not by any means follow that the best research men are those who also do instructional work. The question is largely one of temperament."

5. As regards the technical training for the various departments of research and industry it is my opinion that students cannot well be admitted into all branches at once, but in agriculture, forestry, applied chemistry, botany, and zoology we should at once collect students from all parts of the country and all those who have the necessary qualifications, as might be laid down by the proposed Science Council, should be admitted for training at their own risks, without receiving any promise from Government or the Industrial Syndicate as to their future appointment and prospects. Both the syndicate and Government will then be in a position to make the best selection from among a large number of students so trained for the various departments. Moreover, the competition so engendered will ensure the best brains of the country being placed at the disposal of Government and syndicate for the good of the country.

6. The practical training of qualified students in pure and applied science in factory, field, or forest should be administered through the agency of the industrial syndicate and the Science Council, on the recommendations of whom

the Government of India, Local Government, or private firms may extend facilities for the completion of such training.

7. All results of research should be published in full detail for the benefit of the public, and nothing should be kept secret, for, as Dr. Hoffmann used to say, "there is no chemical secret that cannot be discovered, hence it is not worth concealing". I should not insert such a suggestion as this had I not personal knowledge that in some cases there has been a distinct tendency in the past to withhold detailed information on vital points.

In conclusion, I must apologize for the length and very obvious literary and other defects of this paper. My sole object has been to offer a frank opinion for whatever it may be worth and, should any of my suggestions be considered worthy of further consideration, I shall feel that I have not laboured in vain.

(*Witness did not give oral evidence.*)

S. G. P. I.--365 S. I. I. C.—30-9-18.

SUPPLEMENTARY WRITTEN EVIDENCE

BY

MR. A. H. SILVER, *Controller of Textiles, Indian Munitions Board.*

(For the written and oral evidence of this witness see pages 126—157 of volume I of the Minutes of Evidence.)

Notes on Provincial Syndicates for developing local industries.

This syndicate is composed of some four or five individuals who probably possess between them capital to the extent of some two lakhs of rupees. Its first venture was to attempt the organization of the blanket-weaving industry and they chose as its headquarters Muzaffarnagar, where blanket-weaving is common. The syndicate commenced business about October 1916 and has since that date been able to take up some fairly large Government contracts for hand-made blankets—contracts which could not have been placed with small individuals. It is at present engaged on a contract for one lakh of blankets of army quality, size $7\frac{1}{2}' \times 5'$, weighing $4\frac{3}{4}$ lbs. each. The ordinary hand-made blanket is not wide enough for army purposes but with the help of some technical instruction Provincial manufacturers have now been able to sew the narrow widths together satisfactorily and then put the blanket through a process of milling or fulling by which means the finished blanket closely resembles the mill-made blanket. They have recently commenced the introduction of fly-shuttle looms of wide reed space capable of weaving a full-width blanket. They have themselves made up to the present 26 of these looms and, having been successful with these, are proceeding to make up this number to 100. The looms are loaned out to weavers working for the syndicate.

The syndicate purchases its yarn from villages throughout the north of India—the members buy the wool themselves and give it out for spinning locally, paying 3 annas per seer for spinning. This is usually done by women, and experience shows their output to be approximately one seer per day, the work being done in addition to their ordinary household work. In the case of men devoting their whole time to spinning the outturn is found to be from 2 to $2\frac{1}{2}$ seers per day.

The weaving of the blankets is done mainly in the Muzaffarnagar and Najibabad districts—10 annas per blanket is paid for weaving, and the average output per man is from $1\frac{1}{2}$ to 2 blankets per day. The milling or fulling is done in three centres, but mainly in Muzaffarnagar itself, where the syndicate has established a depôt. One pair of men mill five blankets per day and are paid 0-4-6 per blanket, the pair thus earning Re. 1-6-6 per day between them. At present the syndicate have some 400 weavers working for them in their homes and about the same number milling. The present output of blankets is rather over 20,000 per month.

It will be observed that on this work alone the syndicate is paying out in monthly wages some Rs. 11,000 for spinning, Rs. 12,500 for weaving, and Rs. 5,600 for milling. This, added to the cost of carting, handling, and baling the blankets, means that a total of over Rs. 30,000 monthly is being paid out in wages to these workers. The effect of this upon the people is, I am informed, most marked; indebtedness has been paid off and the women are purchasing ornaments.

Having taken up the organization of the blanket-weaving industry the same syndicate has been in a position to tender for the supply of made-up jhools required by the Ordnance and Supply and Transport Departments—most of these jhools are of blanketing faced with jute canvas. They have been successful in securing a fairly large order recently and this will give work to another set of people.

They have recently submitted samples of hand-made webbing and tapes—this is another village industry which is capable of being organized upon the same lines and it is probable that orders for this class of goods will be duly passed to this or to similar organizations.

The syndicate is virtually a private trading concern, but each member of it takes in hand some portion of the practical work which requires to be done. One member, for instance, is engaged in purchasing wool and handing it out to local spinners, while another member spends his whole time at the receiving centre of Muzaffarnagar inspecting the blankets as received from the hand-weavers and supervising their milling and fulling. The making up of these blanket strips (as ordinarily woven) into full-width blankets suitable for army use and the milling of the same is a new industry and could only have been brought about by the widespread operations of such a syndicate.

Note regarding the work of the Association of Provincial Manufacturers in the United Provinces.

As promised, I now send you the latest information which I can obtain with regard to the operations of the Provincial manufacturers in the United Provinces.

The manufacture of blankets is still their main line and under their present arrangements the blanket passes through the hands of five different classes of workmen, namely, teasers, spinners, weavers, Tailors, and millers.

Teasers. One man teases from 15 to 20 lbs. of raw wool per day and is paid from Rs. 2-8 to Rs. 3 per maund for this work, but during the monsoon when the wool is damp and is consequently difficult to tease this rate is increased up to as much as Rs. 4 per maund.

Spinners. The bulk of the work is done by women and the rate of output is still approximately one seer per day as this work is carried out in addition to the ordinary household duties. The rate for spinning is still 3 annas per seer.

Weavers. Ten annas per blanket is still paid for weaving. When the work was first started the syndicate found that the "Gadaria" and "Kamalia" class were the only ones who would take up the work, but gradually the "Julaha" class has been encouraged to take it up and the industry has, therefore, come to the rescue of those "Julahas" who were finding it difficult to continue their ordinary work on account of the high prices of cotton and cotton yarn. It is reported that the "Julahas" have proved themselves already equal to the "Gadaria" and "Kamalia" class—in some cases better, and I think that there is little doubt but that the "Julaha" class will in the end show better results than those who took up the work originally. A weaver, with the help of a boy, who assists in the sizing of the warp, can weave two whole lengths of blankets per day and, therefore, earn Re. 1-4 per day.

Tailors. After the blankets are woven in the ordinary hand-looms the comparatively narrow widths have to be sewn together with woollen yarn prior to milling. Each blanket length as it comes from the loom is cut into three equal parts which are sewn together to make a complete blanket of the required width and length. It is found that the tailor ordinarily finishes 35 complete blankets per day, and he is paid at the rate of ½ anna per blanket.

Milling. This was originally done entirely by the "Gadaria" class, but in this direction also it has been found possible to induce the "Julahas" to take up the work and I am informed that there are now more "Julahas" at work than "Gadarias". The men work in pairs and each pair does from four to five blankets per day for which they are now paid at the rate of per blanket—the former rate was 4½ annas per blanket.

The output of the syndicate under present arrangements still averages approximatly 20,000 per month, but they hope to do better as I am informed that they are engaging more weavers. The bulk of the labour employed is, of course, engaged in the spinning of the yarn, and the syndicate has godowns and agencies for giving out the wool for spinning at Meerut, Saharanpur, Bijnor, and Karnal. That is, I think, all that I can tell you about the blanket industry except that, following the examples of the Provincial manufacturers of Cawnpore, I have been approached by the representative of another syndicate which proposes to operate with Panipat as its centre in the same line of business. Lala Anand Sirap, one of the leading residents of Muzaffarnagar, has taken up the same work and orders have been placed with Messrs. H. Bevis & Co. of Cawnpore (a firm owned by Lala Bhagvandas) and Messrs. Boota Singh & Sons who each propose to operate in the same manner.

The Provincial manufacturers took up the supply of some country-made felt last year for the Government Harness & Saddlery Factory upon the same lines, while, as Director of Industries, I also placed with them a large order for khus-khus tatties which were required for overseas and which they got made promptly. I am considering the possibility of offering further employment to the "Julaha" class by placing with them, through similar Syndicates, orders for shirting twills, towels, dusters, and any fairly heavy cotton fabrics which may be needed from time to time for the army services for which I buy. There is, however, one difficulty in the road according to the information at my disposal, and that is unnecessary interference on the part of zamindars. I am informed that the weavers are frequently harassed by the zamindars and forced to work for them under the threat of being turned out of their villages on refusal. This is a matter to which the Commission might usefully direct attention.

I might add that certain forms of cutlery can usefully be made through the agency of similar syndicates as several villages and districts are capable of turning out such items as spoons, forks, table knives, clasp knives, etc. I am informed that goods of this character made in the districts of Moradabad, Bijnor, and Aligarh have been sold in fairly large quantities in the Bombay market. In addition, of course, there are several districts in the Punjab where goods of this class are regularly and fairly largely made.

SUPPLEMENTARY WRITTEN EVIDENCE.

BY

Mr. G. Findlay Shirras.

MR. G. FINDLAY SHIRRAS, M.A., F.S.S., I.E.S., *Director of Statistics.*

(*For the written and oral evidence of this witness see pages 778...869 of volume V of the Minutes of Evidence.*)

MEMORANDUM ON BANKING.

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5. Concluding paragraph (Paragraph 31).

Memorandum on Banking.

This memorandum has been prepared at the request of the President of the Industrial Commission. It is mainly, if not entirely, descriptive, and not analytical. Its object is to describe (*a*) some of the main features of the Indian banking system, and especially the business of the various classes of banks in the financing of Indian commerce and industry; (*b*) the methods followed by the Grossbanken, or Great Commercial Banks of Germany; and (*c*) the main features of the Industrial Bank of Japan and the British Trade Bank. Although based, so far as Indian banking is concerned, on "Statistical Tables relating to Banks in India", published by the Department of Statistics, it is in no sense an "official" memorandum. The memorandum has not been prepared under the instructions of Government. For the statements which it contains I am alone responsible.

I.—Indian Banks.

2. *Presidency Banks.*—It is not intended to trace the history of joint stock banking in this country from its introduction into India by the agency houses in Calcutta in 1770, when the Bank of Hindustan was founded by the firm of Messrs. Alexander & Co., nor is it intended to refer to the extension of banking after the establishment of the Bank of Bengal in 1809; nor to the bank failures between 1829 and 1833 (which put an end to most of the Agency Houses, such as Alexander & Co., Colvin & Co., Fergusson & Co., Mackintosh & Co., Palmer & Co., and Cruttenden & Co.); nor to the vicious system which began as early as 1839 of large advances upon indigo factories and the personal security of the borrower, a system which at the close of 1842, by the failure of indigo houses (Messrs. Fergusson Brothers, Gilmore & Co., etc.), resulted in 60 lakhs of rupees being locked up in indigo. Reference need not be made to the lessons of mismanagement in the first half of the 19th century, equalled perhaps only by the failures in 1913-14, or to the Raj Kishore Dutt forgeries when the Bank of Bengal lost at least Rs. 3½ lakhs and the shareholders a dividend for one year, which coincided with the fall of the bank's stock from Rs. 6,000 to Rs. 500 premium, and even to par. It is not necessary to refer to the scandals connected with the failure of the Benares Bank in 1849, to the Bank of Bengal's breaking its charter during the crisis of 1829-32, or to the winding up of the Bank of Bombay in January 1868*. It is intended in this part of the memorandum rather to show what functions the main classes of banks fulfil in the banking system. The Presidency Banks, the Exchange Banks, and several of the Indian Joint Stock Banks have done excellent work, often too in difficult circumstances, and it is interesting to examine how far each plays a part in the banking system.

3. *Distribution of Banks and their Branches.*—In connexion with this memorandum two maps† have been prepared. The first map‡ shows the Presidency Banks, the Exchange Banks, and the Indian Joint Stock Banks, with their branches, throughout India. The second map (not printed) shows the Treasuries, district by district, and Currency Offices. This latter map may also be taken as an example of what a banking map of India would be under an ideal system of bank distribution. The Presidency Banks are confined to a fixed territory in accordance with the Presidency Banks Act of 1876 (Act XI of 1876, sections 3 and 42). Section 42 permits

* These points, and the lessons to be drawn from them, were treated at some length in the 1914 Readership Lectures on Indian Currency and Finance in the Calcutta University.

† Not reproduced.

‡ The map and the tables on the map refer to 1915.

of the establishment " of branches or agencies at such places within the Presidency in which the bank is situate, as they (the Directors) deem advantageous to the interests of the bank; and, with the previous consent of the Governor-General in Council, and subject to such restrictions as to the business to be transacted, as he thinks fit, in each case, to impose (such consent and restrictions being notified in the *Gazette of India*), to establish branches or agencies at such places outside the Presidency in which the bank is situate, as the Directors deem advantageous to the interests of the bank; provided that no agency of the bank now or hereafter established in Bombay, Calcutta, or Madras shall advance, or lend money, or open cash credits on securities, or receive deposits and keep cash accounts or discount bills of exchange drawn and payable in the Presidency in which it is so established, or shall act as agent on commission, or transact any business except as agent of its principal bank, or any of its branches or other agencies". The Bank of Madras is limited to the Presidency of Fort St. George, which means the territories under the government of the Governor of Fort St. George in Council; the Bank of Bombay to the Presidency of Bombay, which means the territories under the government of the Governor of Bombay in Council; and the Bank of Bengal to the Presidency of Fort William, which means all the territories in British India, other than the Presidency of Fort St. George and the Presidency of Bombay. The Exchange Banks are situated in Calcutta, Bombay, Madras, Karachi, Rangoon, Tuticorin, Cochin, Chittagong, and also in Delhi, Cawnpore, Howrah, Srinagar, Lahore, Amritsar, Rawalpindi, Murree, Tavoy, and Mandalay. The inland branches of the Exchange Banks are concerned largely with the financing of piece-goods. It will be noticed from the map that the Indian Joint Stock Banks are scattered chiefly over the Punjab and the United Provinces. There are very few Indian Joint Stock Banks in the rest of India except in the southern parts of Madras. The Indian Joint Stock Banks are of small importance as compared with the Presidency Banks or even the Exchange Banks. The deposits are less than 23 per cent of the total as will be seen from the following figures for 1916 :—

Banks.	Deposits (£1,000)	Per cent of total.
Presidency Banks (3)	33,276	43·9
Exchange Banks (10)	*25,359	33·5
Indian Joint Stock Banks (48)†	17,149	22·6
Total (61)	75,784	100

It will be seen from the map that there are no Indian Joint Stock Banks in Assam, and none in Burma with the exception of Rangoon. In the Native States, Joint Stock Banks, with one or two exceptions, may be said to be extremely few, if not altogether non-existent. The following table gives the number of branches, together with head offices, throughout India in 1916 :—

Banks.	Head Offices.	Branches and Agencies.‡
Presidency Banks—		
Bank of Bengal	Calcutta	25
Bank of Bombay	Bombay	14
Bank of Madras	Madras	23
Total	3	62
Exchange Banks	§	45
Indian Joint Stock Banks	68	160
Total	68	205
GRAND TOTAL	71	267

It will be seen that the branch banking system is not yet developed to a large extent. This map includes only Joint Stock Banks, and does not include the business undertaken by the banias, saucars, mahajans, or by private firms which frequently do banking business as a subsidiary part of their main business‖. Notwithstanding the increase of the Joint Stock Banks the circulation of the hundies of these bankers has increased in the last two decades as the evidence collected during the Enquiry into Prices in India showed. The loss incurred from the dishonouring of these hundies at maturity is an insignificant fraction per cent.

* Deposits in India.
† Banks furnishing returns.
‡ *Cf.* Appendix I for a list of these.
§ There are 10 Exchange Banks doing business in India of which the head offices are situated outside India.
‖ *e.g.*, Messrs. Thacker, Spink & Co. and similar firms have a banking and agency department, *e.g.*, they open current accounts, attract deposits, etc.

These bankers are able to place themselves in funds in the Presidency towns by calling for remittances from their numerous agencies established in various parts of India. It is not possible to give estimates of the extent to which the Indian bankers (mahajans, marwaris, etc.) receive deposits and take part in the internal financing of trade. It may, however, be said that they do so to a large extent. After the outbreak of war they restricted credit to a considerable degree as may, to some extent, be gathered from the bills discounted and purchased by the Presidency Banks at or about the end of December.

	1913 ₹(lakhs).	1914 ₹(lakhs).	1915 ₹(lakhs).	1916 ₹(lakhs).
Bank of Bengal	274	184	248	317
Bank of Bombay	161	62	114	113
Bank of Madras	167	81	89	101
Total	602	327	451	531

In this connexion it may be pointed out that these bankers are very useful middlemen to the Presidency Banks. They get into touch with traders in a way the banks do not.

They, therefore, bring business within the scope of the Presidency Banks Act, and enable the banks to give accommodation. These Indian bankers go to the banks to get bills or hundies discounted under their endorsements, the banks accepting such bills freely to an extent determined by the standing of the Indian or native banker, and the strength of the drawers. The banks have found it one of the safest kinds of business in which to engage. Recourse is had to the bank when the demands are greater than these bankers can meet from their own funds. The accommodation by these bankers depends on (1) the limit to which the banker thinks he can, or should, make advances, and (2) the extent to which the banks are prepared to discount bills bearing the banker's endorsement. When Joint Stock Banks are established in the various market towns of agricultural districts these Indian bankers may find it convenient to make deposits and employ the banks for remittances. This, however, opens up a large question which cannot be conveniently discussed here.

The amount of paid-up capital and reserve in Indian banks is still small as compared with that in the United Kingdom. The "capital and reserve" in 1916 is only £46 millions as compared with £132 millions in the case of the United Kingdom; the deposits amount to £76 millions as compared with £1,658 millions; the deposits per thousand of population £241 as against £36,657; and the deposits per £1,000 of trade £288 as compared with £1,015 (Appendix II).

4. The Presidency Banks have deposits of over £33 millions as compared with £25 millions in the case of Exchange Banks and £17 millions in the case of Indian Joint Stock Banks. The capital, the reserve, and the cash balances of the three banks are given in Appendix III. It will be seen that during the 27 years (1890 to 1916) the capital and reserve increased considerably. Private deposits increased by 203 per cent in the 27 years while the public deposits increased only by 45 per cent. Cash balances increased by 33 per cent. The following table shows the increase of private deposits of the Presidency Banks in the five years ending 1916:—

	Bank of Bengal.		Bank of Bombay.		Bank of Madras.	
On 31st December.	Private deposits ₹(lakhs)	Cash balances ₹(lakhs)	Private deposits ₹(lakhs)	Cash balances ₹(lakhs)	Private deposits ₹(lakhs)	Cash balances ₹(lakhs)
1912	17,11	6,65	11,29	3,15	7,43	1,96
1916	21,44	7,73	13,67	6,68	9,60	2,87
Increase	25%	16%	21%	112%	29%	46%

Private deposits increased by 29 per cent in the case of the Bank of Madras, 25 per cent in the case of the Bank of Bengal, and 21 per cent in the case of the Bank of Bombay. Cash balances increased by 112 per cent in the case of the Bank of Bombay, 46 per cent in the case of the Bank of Madras, and 16 per cent in the case of the Bank of Bengal. The increase in the Bank of Bombay's cash balance in 1916 is noteworthy.

As compared with the pre-war year (1913) private deposits increased by 17 per cent in the case of the Bank of Bengal, 19 per cent in the case of the Bank of Madras, and 34 per cent in the case of the Bank of Bombay. Cash balances showed an increase of 40 per cent in the case of the Bank of Bombay and 31 per cent in the case of the Bank of Madras, but a decrease of 8 per cent in the case of the Bank of Bengal. The figures refer to the 31st December in each year. The proportion of the cash to the liabilities on deposits of the Presidency Banks at the end of 1916 was 35 per cent as compared with 25 per cent in the case of Exchange Banks doing a considerable portion of their business in India.

35 per cent in the case of Exchange Banks which were merely agencies of large banking firms doing business all over Asia, and 24 per cent in the case of major Indian Joint Stock Banks.

5. The question of the relations between the Presidency Banks and Government is not relevant to the present issue and it is unnecessary for me to go into this. The earlier history is dealt with in Mr. Brunyate's book *, and some information on the subject will be found in the Report of the Chamberlain Commission.

The most important sections dealing with the restrictions at present in force with the Presidency Banks are sections 24, 26, 27, 34, 36, 37, 42, 43, and 63. Sections 24, 26, and 27 refer to the Directorate, including the qualifications and disqualifications of Directors; sections 36 and 37 deal with the business which the banks may not transact; section 42 with the establishment of branches and agencies; section 43 with the balance-sheets; and 63 with the power of Directors to make bye-laws. Section 37, which is of special importance, is as follows :—"The Directors shall not transact any kind of banking business other than those above specified (*i.e.*, in section 36), and in particular they shall not make any loan or advance :—

Quoted from Unrepealed General Acts, volume II, page 504.

(*a*) for a longer period than six months; or

(*b*) upon the security of stock or shares of the bank of which they are Directors; or

(*c*) save in the case of the estates specified in section 36, paragraph (*bb*), upon mortgage, or in any other manner upon the security of any immovable property or the documents of title relating thereto; nor

(*d*) shall they [except upon the security mentioned in section 36, paragraph (*a*), Nos. 1 to 5, inclusive] discount bills for any individual or partnership-firm for an amount exceeding in the whole at any one time such sum as may be prescribed by the bye-laws for the time being in force, or lend or advance in any way to any individual or partnership-firm an amount exceeding in the whole at any one time such sum as may be so prescribed †; nor

(*e*) shall they discount or buy, or advance or lend, or open cash credits on the security of any negotiable instrument of any individual or partnership-firm, payable in the town or at the place where it is presented for discount, which does not carry on it the several responsibilities of at least two persons or firms unconnected with each other in general partnership; nor

(*f*) shall they discount or buy, or advance or lend, or open cash credits on the security of any negotiable security having at the date of the proposed transaction a longer period to run than six months ‡ § or, if drawn after sight, drawn for a longer period than six months ‡.

* * * * * * *

"Nothing contained in this Act shall be deemed to prevent the Directors from allowing any person who keeps an account with the bank to overdraw ‖ such account, without security, to the extent of sums not exceeding at one time ten thousand rupees in the whole ¶ as may be prescribed for the time being by the bye-laws made under this Act."

6. *Exchange Banks.*—The Exchange Banks, several of which were founded 60 years ago, play an important part in the financing of Indian trade. There are ten banks; of these five do a considerable portion of their business in India, *e.g.*, the Chartered Bank of India, the National Bank, the Mercantile Bank, etc., while others are merely agencies of large banking corporations doing business all over Asia, *e.g.*, the Hongkong and Shanghai Bank, the International Banking Corporation, the Yokohama Specie Bank, etc. The Delhi and London Bank, it may be noted, has recently been amalgamated with an Indian Joint Stock Bank, the Alli-

* An Account of the Presidency Banks, by the Hon'ble Mr. J. B. Brunyate, C.S.I. (The book has not been published, but copies are in the Imperial Library, Calcutta, at the India Office, etc.)

† This clause was substituted by the Presidency Banks Act, 1879 (V of 1879), section 5, General Acts, volume III. The original clause was as follows :—

"Nor shall they lend or advance by discount of bills or otherwise, to any individual or partnership-firm [except upon the security mentioned in section 36, paragraph (*a*), Numbers (1) to (5), inclusive], any sums of money exceeding in the whole at any one time such sum as may be prescribed by the bye-laws for the time being in force".

‡ These words "six months" were substituted in both places in which they occur for "three months" by the Presidency Banks (Amendment) Act, 1907 (I of 1907), section 4(*iii*), General Acts, volume VI.

§ The following proviso was repealed by the Presidency Banks (Amendment) Act, 1907 (I of 1907), section 4 (*iii*) *ibid* :—

"Provided that in the case of the Bank of Madras the Directors may discount negotiable securities payable in Ceylon having at the date of the transaction a period to run not exceeding four months."

‖ The words "to overdraw" were substituted for "from overdrawing" by the Presidency Banks (Amendment) Act, 1907 (I of 1907), section 4 (*iv*), *ibid*.

¶ These words were substituted for the words "sums not exceeding at any one time two thousand rupees in the whole" by the Presidency Banks (Amendment) Act, 1907 (I of 1907), section 4 (*iv*), *ibid*.

ance Bank of Simla. The following table summarizes the position of the Exchange Banks that do business in India :—

*Capital, reserve, deposits, and cash balances of the Exchange Banks, classified in groups, according to extent of business in India, on the 31st December 1916.**

	No. of Banks.	Capital.	Reserve and Rest.	Deposits.		Cash Balances.	
				Out of India.	In India.	Out of India.	In India.
		£(1,000)	£(1,000)	£(1,000)	R(1,000) £1,000	£(1,000)	R(1,000) £1,000
(1) Banks doing a considerable portion of their business in India	5	3,812	3,981	45,722	31,54,40 =£21,029	14,095	7,86,14 =£5,241
(2) Banks which are merely agencies of large banking corporations doing business all over Asia . .	5	19,024	11,114	162,510	6,49,48 =£4,330	27,272	2,27,87 =£1,519
Total .	10	22,836	15,095	208,232	38,03,88 =£25,359	41,367	10,14,01 =£6,760

This summary statement will be referred to in a subsequent paragraph.

7. It is important to describe the part which the Exchange Banks play in Indian trade. The business of these banks may be divided into (*a*) exchange business, and (*b*) ordinary banking business.

8. Firstly, with regard to the *exchange business* so far as it relates to the export trade of India. Bills against the export trade are drawn D/A (documents on acceptance) and D/P (documents on payment). They are purchased by the banks' branches in India. The D/P bills are held by their London offices until they are retired or paid at maturity. The D/A bills as a general rule are discounted, or rediscounted, immediately after acceptance. They are rediscounted with the English Joint Stock Banks and the Scotch Banks, or with bill-brokers financed by these, and, especially in times of stringency, with the Bank of England. These bills may be held for a time by the Indian Exchange Banks in London. This would only occur when business in India was stagnant. To the extent to which the D/A are rediscounted immediately after acceptance (which they are in the great majority of cases) the Indian export trade is financed not with the funds of the Exchange Banks except from the time of the purchase of the bills in India to their arrival in London†, but with the funds of the British banks, *i.e.*, with British, and not Indian, capital.

Next, with regard to the import trade. The Exchange Banks also finance the import trade through their London offices. Bills are drawn on the consignees D/A or D/P, in sterling for the most part, payable with interest, from the dates of the bills to the approximate dates of arrival of the remittances in London, by demand draft on London. These bills are never rediscounted. Thus, the import trade, it will be seen, is financed to a much greater extent than the export trade with the funds of the Exchange Banks alone. The Exchange Banks' purchases of Indian export bills represent transfers of their funds to London. Their advances against import bills are the return of these funds. As exports normally exceed imports the deficiency of import bills is made good by shipments of gold coin and bullion and also silver bullion from London and elsewhere and, to a very small extent, by transfers of Government rupee paper from London to India ‡, and as regards the balance by purchases of Council Bills and Telegraphic Transfers §. The last will be resorted to freely when exports from India are at their height, and when it is to the banks' interest to move their funds back to India in the shortest possible time. The Chartered Bank, for example, may buy on Wednesday these transfers and by the following day the Calcutta, Bombay, and Madras branches will find themselves in funds. This, in brief, is an outline of the banks' exchange business proper.

9. The Exchange Banks also do an *ordinary banking business,* and in this they have as competitors both the Presidency Banks and the Indian Joint Stock Banks. They compete with these latter banks in raising deposits, whether on current account or as fixed deposits.

* It is not possible to give the deposits and cash balances bank by bank. The representatives of the Exchange Banks, however, *i.e.*, of the Chartered Bank of India, the National Bank, the Mercantile Bank, the Eastern Bank, the Hongkong and Shanghai Bank, and also the so-called Foreign Exchange Banks, in fact all the Exchange Banks with the exception of the Delhi and London Bank, informed the Chamberlain Currency Commission that if all the banks agreed to publish an account of their Indian deposits and Indian cash, apart from outside Indian deposits and cash, they would have no objection to the separate publication for each bank of such details.

† At the present time the mails take about four weeks, and the amount which the Exchange Banks have invested in the transit of bills is large and about twice what it is in normal times.

‡ This is of little importance, and seems to be decreasing.

§ The purchases of Council Bills and Telegraphic Transfers ordinarily exceed the net imports of treasure (*vide* The Review of Trade, 1915-16, page 97—Table on the Balance of Trade).

Their deposits have increased very considerably during the last few years (Appendix V). The terms for deposits, both on fixed deposit and on current account, are, as a rule, more favourable than those of the Presidency Banks, while less favourable than those of the Indian Joint Stock Banks. The Exchange Banks also compete with these banks in loans, overdrafts, and discounts. It will be seen from table II in paragraph 3 that the Exchange Banks have 45 branches in India as compared with 65 branches (including head offices) of the Presidency Banks and 68 head offices and 160 branches in the case of Joint Stock Banks. The summary table in the same paragraph shows that the Indian deposits of the Exchange Banks amount to £25,359,000 as against £33,276,000 of the Presidency Banks and £17,149,000 of the Indian Joint Stock Banks. Inasmuch as the Exchange Banks are not under the obligation resting on the Presidency Banks of maintaining, even during the busy seasons, large cash balances, it may be said that their deposit position is rather better than a comparison of their figures with those of the Presidency Banks would lead one to suppose—£25,000,000 against £33,000,000—or the percentages in table 1 in paragraph 3 would lead one to think. The Presidency Banks' deposits include the balances of the Exchange Banks. On the average of the five years ending 1916 the cash balances of the Exchange Banks on the 31st December amounted, it may be noted, to 48 per cent of the total balances of the Presidency Banks. Upon the strength of the deposits will a bank's participation in the loan, overdraft, and discount business depend. The extent, then, of the Exchange Banks' participation in this ordinary banking business will readily be understood. The Secretary of the Bank of Bengal in his evidence before the Chamberlain Commission said that the Bank of Bengal had to reduce its rates in Calcutta for advances to jute mills to ½ per cent below the bank's published minimum in order to compete successfully with the Exchange Banks. The representatives of the Exchange Banks before the Commission also said that they were, to some extent, in competition with the Presidency Banks, and illustrated this by the branches of the Exchange Banks in Delhi and Amritsar, which foster in these cities their Manchester connexion. It must, however, be remembered that when exchange business is at its maximum, in February and March of each year, the funds of the Exchange Banks are much more largely invested in the exchange class of business than at other times. This is important as it results in some impairment of their power to compete with banks other than Exchange Banks in the discount market.

10. *Indian Joint Stock Banks.*—Indian Joint Stock Banks are 68 in number, with 160 branches. The deposits of 48, which furnished returns, amounted to over £17 millions sterling, or nearly 23 per cent of the total deposits in India. As already mentioned they are chiefly scattered throughout the north-west of India, especially in the Punjab and in the United Provinces. Twenty banks, *i.e.*, banks with capital and reserve amounting to above Rs. 5 lakhs, have a paid-up capital of R2,87 lakhs and deposits amounting to R24,71 lakhs. The cash balances were only R6,03 lakhs. Appendix VI gives the capital, the reserve, deposits, and cash balances of these banks classified according to the amount of capital. With the exception of the Bank of Upper India, which was established in 1862, the Allahabad Bank, which was established in 1865, and the Alliance Bank of Simla, which was established in 1874, most of the major banks are of comparatively recent date or have recently been reconstructed (Appendix VII). Recent failures of Indian Joint Stock Banks are already still fresh in mind. About 31 per cent of the capital of Indian Joint Stock Banks has been lost owing to the failures in 1913-16. The estimates on which these figures are based are the following :—

	R (1,000)	Equivalent in sterling £(1,000).
Paid-up capital of Indian Joint Stock Banks working on 31st December 1916	3,39,13	2,261
Paid-up capital of Indian Joint Stock Banks liquidated in 1916 . .	4,23	28
" " " " " " " 1915 . .	4,60	31
" " " " " " " 1914 . .	1,09,12	728
" " " " " " " 1913 . .	35,13	234
	1,53,08	1,021
Total capital of banks, existing and liquidated	4,92,21	3,282

Such a large disappearance of capital owing to these failures is remarkable, and is striking, and may be explained by the phenomenal (almost mushroom) growth of such banks in Western India, in the Punjab, and in the United Provinces, particularly in the five years preceding the failures. In 1911-12 many of the balance-sheets of those companies which did issue balance-sheets were extraordinary. Some of these banks attempted to make large profits without having a staff of experienced bankers. Many had not adequate reserves against their deposits, and the balance-sheets in many cases were good samples of window dressing. In 1910 the percentage of cash to their liabilities was only 11, and in very many cases the percentage was lower than this. Many had little paid-up capital, and the word "bank" was used in a way that exploited deposits from the unwary at rates of interest which made it impossible for money so obtained to be employed lucratively in any way except in the most hazardous enterprises. In one or two cases banking included medical attendance, coach-building, etc. The Presidency and Exchange Banks had not interested themselves to any extent in these banks and, when the debacle occurred, Government gave timely assistance by offering to place funds, if required, at the

disposal of the Presidency Banks, through whose agency assistance could have been given to legitimate trade.

11. Every year balance-sheets show, with one or two exceptions, much to be desired, and it is interesting to compare the provisions that must be observed in the preparation of balance-sheets by Indian Joint Stock Banks and German banks. The managers of a Joint Stock Company in Germany must, within three months, submit to the Board of Directors a balance-sheet for the year past, also a statement of profits and losses, and a report showing the conditions of the funds and the general state of affairs of the company. These documents, with the written remarks of the board, are submitted at a meeting of the stockholders and, after their approval, the balance-sheet and the statement of the profit-and-loss account are published in the newspapers mentioned in the charter of the company. In the preparation of balance sheets in Germany the following general provisions have to be observed :—(1) securities and merchandise having an exchange or market price must not be listed above their exchange or market price prevailing at the time the balance-sheet is made up; in case this price exceeds the cost they must not be listed above this cost; (2) other assets may be valued at prices not higher than the cost of purchase or manufacture; and (3) a reserve fund must be created in order to cover any possible losses shown in the balance-sheet. An annual amount equal at least to one-twentieth of the annual net profits is added to the reserve fund as long as the reserve fund does not exceed a tenth part of the capital, or whatever higher proportion has been provided in the charter of the company. In India the main provisions briefly are :—(1) every Joint Stock Bank shall, at least once every year, cause the accounts of the bank to be balanced and a balance-sheet prepared, duly audited and authenticated, and filed with the Registrar of Joint Stock Companies; the balance-sheet shall contain a summary of the property and assets and of the capital and liabilities of the company, giving such particulars as will disclose the general nature of those liabilities and assets and how the value of the fixed assets has been arrived at; and (2) in addition to this, the bank shall, before it commences business and also twice yearly, make a statement, showing the share capital and the number of shares issued, the amount of calls made and the amount received, and the debts and assets of the company.

12. A great deal may be done by these Indian Joint Stock Banks to further industry and trade in this country. It may be possible for some of them to undertake industrial development. Before, however, our Indian Joint Stock Banks can assist the industrial development of the country it is necessary to prevent by legislation a repetition of the disasters of the past. These weaknesses are well illustrated by liquidators' reports on the People's Bank, the Indian Specie Bank, the Credit Bank of India, the Industrial Bank, and the Hindustan Bank, extracts from some of which are given in Appendix VIII. The Chartered Accountant's report on the Pioneer Bank points out "it is monstrous and deplorable to find that ever since the inception of the bank no profits have been made, * * * * * * * * * *. It is very disappointing to find that the affairs of the bank were not run on lines of legitimate banking". It is necessary to legislate in order to provide that these banks will be of real use in furtherance of Indian trade, and that they will always be in a sound healthy condition. It cannot, in short, be said at the present time that the Indian Joint Stock Banks, with one or two exceptions, are conducted on lines which would give the maximum of assistance to trade. A body of experts would be of advantage in drawing up the restrictions with regard to the use of the term 'bank' and the general conduct of business, the amount of paid-up capital, the investment of funds, the auditing, the advancing of money on security, the publication of required balance-sheets, and of the allocation of profits, etc. Such restrictions will be necessary should it be decided to follow the example of the Commercial Banks of Germany and the Industrial Bank of Japan in regard to the assistance to be given by banks to industry. The following table may be of interest in regard to the small proportion of cash to liabilities on deposits of the Indian Joint Stock Banks :—

	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
I. Presidency Banks	30	33	33	31	35	29	36	46	34	35
II. Exchange Banks*										
(1) Banks doing a considerable portion of their business in India	25	17	20	16	16	20	19	28	19	25
(2) Banks which are merely agencies of large banking corporations doing business all over Asia	44	27	23	21	16	24	17	26	41	35
III. Indian Joint Stock Banks (Capital and reserve Rs. 5,00,000 and over)	14	15	14	11	14	15	18	21	22	24
IV. Indian Joint Stock Banks (Capital and reserve between Rs. 5,00,000 and Rs. 1,00,000)	...	...	...	...	...	...	16	22	22	17

It should be remembered in connexion with the Indian Joint Stock Banks generally that, unlike the Exchange Banks, they are, as a class, unable to obtain funds from London.

* The percentages for the Exchange Banks have been calculated on their deposits and cash balances in India only.

The percentage of cash to liabilities of the major banks on deposits since the beginning of bank failures has increased (24 per cent in 1916 as against only 15 per cent in 1912). With proper restrictions these banks should certainly be able to assist in a far greater degree the development of Indian commerce and industry.

13. *Other Banks.*—In addition to the banks already described there are Post Office Savings Banks with deposits amounting to approximately £10,214,000. Deposits have increased considerably in the last 15 years as the following figures will show :—

Year ended 31st March.	Number of Depositors No. (1,000).	Balance of Deposits, inclusive of interest ₹(1,000).
1900	786	9,64,64
1905	1,059	13,40,70
1910	1,379	15,86,72
1912	1,501	18,89,85
1913	1,567	20,61,14
1914	1,639	23,16,75
1915	1,644	14,89,26
1916	1,660	15,32,12

The deposits are treated by Government as unfunded debt, and there is no reserve against these deposits. The deposits are used for capital expenditure. Experience, however, has shown that a run on these banks, as occurred after the outbreak of war, can be met, when necessary, without a very considerable degree of difficulty. There are also Co-operative Credit Banks. These, however, are not important in the banking system as the capital and reserves (in 1915-16) were only ₹2½ crores, the deposits (including loans held by the banks) ₹7¾ crores.

II.—The Great Commercial Banks of Germany.

14. *The banking business of Indian Joint Stock Banks as compared with the Great Commercial Banks of Germany.*—The Indian banking system, built up on the English model, is widely different from the Grossbanken, or the Great Commercial Banks of Germany*. Indian banks, with some exceptions, have given much assistance to trade on lines similar to those of banks in the United Kingdom. They have granted banking facilities to traders, and by banking facilities are meant those which in the main can be provided by the banks without a "lock-up" such as would impair the liquidity of the bank's assets. The banks receive the spare cash of their customers, grant loans, and discount bills largely. Except as banks for companies they take no part in promotion and flotation business, nor do they deal in stock exchange securities on their own account. The Indian Presidency and Exchange banker, like his English confrère, is, in short, a professional banker in the strictest sense, and he does not assist directly in the running of industrial concerns. The Great Commercial Banks of Germany, however, undertake, in addition to the ordinary business of attracting deposits, giving loans, and discounting bills, the supply of capital to promote the founding of an industry which is not considered proper banking business in this country, although short loans for this purpose are not unusual. The Grossbanken promote industry and commerce by devoting capital and credit to the building of works, plant, etc., on a large scale, and they take a close interest in the industry to which they have given their support. They float new companies either by inviting subscriptions from the public (Zeichnung) or by themselves (Einführung). In this latter case a bank, or syndicate of banks, take up the shares ; and they may sell these after a year, since, according to Article 41 of the Bourse Law, they are permitted only to place the shares on the Stock Exchange on the expiry of one year, and only after the first balance-sheet has been published. The banks also regulate the shares by buying when they are extremely low, or selling when they appear to be unduly high. They also buy and sell securities on a large scale on their own account, a practice which is not, perhaps, to be commended for our Indian banks. The banks, however, do not engage *ordinarily* in the speculative selling or buying of shares.

* These banks are usually known as Credit Banks—a term which in no way shows the scope of the activity of these banks. The term, however, is used to differentiate those Commercial Joint Stock Banks which do not possess a note issue from those banks which are limited to a greater extent in the scope of their operations, such as the mortgage banks, the mutual or co-operative banks, the savings banks, etc.

The issues of securities made in Germany according to the *Deutscher Ökonomist* were as follows :—

	1906.		1907.	
	In millions of marks.			
	Face value.	Nominal value.	Face value.	Nominal value.
State loans	637·00	638·11	551·00	546·22
Communal loans	346·83	347·00	430·86	425·44
Mortgage bonds	404·59	404·59	326·33	326·33
Railway bonds	9·50	9·02	1·00	0·99
Industrial bonds	182·27	183·10	170·90	172·79
Railway shares	1·70	2·16	0·61	0·62
Bank shares	184·19	282·19	108·89	152·49
Insurance Companies' shares	1·50	1·86	3·06	3·06
Industrial shares	389·94	652·80	284·14	431·32
Total	2,157·52	2,520·83	1,876·79	2,059·26

It will be seen that about 30 per cent of the issues were industrial bonds and shares. The issuing business absorbs a *very* large portion of banking activity and it requires much sagacity and caution on the one hand, coupled with an intimate knowledge of trade conditions on the other. A large amount of knowledge and practical experience is required. For example, it is necessary to see whether a quick distribution of the issue is possible, in view of the situation of the home market, general, economic, and political conditions. The fixing of the most advantageous conditions of underwriting and of payment, etc., are all studied carefully. The banks are well posted as to information, especially statistical, in their "Secretariats". The banks' security transactions may include voluntary transactions, *e.g.*, in investing liquid bank resources in equally liquid securities, and involuntary security transactions, *e.g.* (1) the holding of those securities which cannot at the time be disposed of, such as securities issued by the bank itself, or turned over to it as its share of syndicate participations ; and (2) the purchase of securities immediately after their issue for the purpose of preventing an undue depression of their market value. Excessive holdings of securities are avoided as this may be interpreted to mean (1) that the issues of the bank have not been issued at the time they ought to have been issued ; or (2) that the bank has made excessive speculative engagements on account of its clients ; or (3) that on its own account it has been involved in excessive speculative transactions, "a line of business which", in Riesser's words, "can be regarded as permissible only to a very limited extent" ; or (4) that the bank is unable to find profitable employment for its funds.

15. The banks, in short, as flotation concerns, watch permanently over the companies which they have promoted. The intimate connexion of the so-called regular banking business with that of the floating of companies, the trading in, and the issue of, shares is typical of the organization of the German Commercial Bank system. Industrial financing and stock issuing, it may be noted here, were part of the functions of the oldest Grossbanken founded as early as the middle of the nineteenth century. The model for these institutions was, of course, the Paris Crédit Mobilier, founded by Pereire Brothers. The adaptations were, however, not merely imitations for imitation's sake, but originated in answer to the real demands of German economic development. The endeavours on the part of the German Credit or Commercial Banks, especially the chief Berlin banks, to place the banks at the service of German commerce and industry have been remarkably successful during the last 30 years, and especially as the table in Appendix IX shows, since 1896.

16. *The strength of the eight Grossbanken.*—Before the outbreak of war the eight German banks (the Grossbanken), including the banks associated with them, possessed a capital of no less than £132,000,000 as compared with £120,000,000*, the whole banking capital of the United Kingdom, and £46,000,000 † in the case of India.

* Excluding the Bank of England, as the Reichsbank is excluded from the Grossbanken capital of £132,000,000.
† Includes the total capital and reserves of the Exchange Banks as their Indian portion cannot be estimated.

The amount of the capital of the eight great German Commercial banks is as follows:—
(1912).

Name of Bank.	Capital.	Reserve fund.	Profit and loss, etc.	Deposits and Current Accounts.	Total liabilities, including amounts in columns 2, 3, 4, and 5.
1	2	3	4	5	6
	£	£	£	£	£
Bank für Handel und Industrie .	8,000,000	1,600,000	557,765	27,380,000	44,726,489
Berliner-Handels-Gesellschaft .	5,500,000	1,725,000	648,230	15,933,000	28,729,303
Commerz und Disconto Bank .	4,250,000	675,000	...	14,082,000	23,322,352
Deutsche Bank	10,000,000	5,500,000	3,213,341	78,673,000	112,998,223
Direction der Disconto-Gesellschaft .	10,000,000	4,065,000	1,471,394	30,226,000	58,013,331
Dresdner Bank	10,000,000	3,050,000	1,255,791	44,348,000	72,275,403
National Bank für Deutschland .	4,500,000	788,500	24,000	13,516,000	22,818,827
A Schaaffhausen'scher Bankverein .	7,250,000	1,708,066	839,061	16,854,000	35,474,983
TOTAL .	59,500,000	19,111,566	8,010,282	241,012,000	398,358,910

Of these Grossbanken the Deutsche Bank founded in 1870 is the most powerful, and its dividend is usually the highest. From 1909 to 1912 it was at the rate of 12½ per cent. It will be noted from the table that the total capital is £59,500,000, the reserve fund £19,111,566, the profit-and-loss account £8,010,282, and the current accounts and deposits £241,012,000. The capital, reserves, and other money belonging to these Grossbanken are about one-third of the deposits. The Grossbanken have founded other banks (foreign banks) in combination or otherwise. The Deutsche Bank, for example, founded or took part in the founding of the Deutsche Asiatische Bank (1889), the Banca Commerciale Italiana (1894), and at least five other banks. They have absorbed not only banks and private bankers, but through stock-ownership have community of interest with numerous banks. The ramifications of these Grossbanken are given in Riesser's "Die Deutschen Grossbanken (Appendix IX—the development of concentration).

17. *The interlocking of these Banks and Industrial concerns.*—A statement has been compiled from the appendices of Riesser's "Die Deutschen Grossbanken und ihre Konzentration"* (the Locus Classicus) and is appended to this memorandum to illustrate the interlocking of the Grossbanken and industrial concerns. The Bank für Handel und Industrie, the Berliner Handels-Gesellschaft, the Commerz und Disconto Bank, the Deutsche Bank, the Direction der Disconto-Gesellschaft, the Dresdner Bank, the National Bank für Deutschland, and A Schaaffhausen'scher Bankverein are represented on no less than 697 companies, or on an average of 87 companies for each bank. The Deutsche Bank is represented on 116 companies, the National Bank on 96, A Schaaffhausen'scher Bankverein on 94, and the Disconto-Gesellschaft and the Bank für Handel und Industrie on 92 each. Trading concerns and banks, machine construction and instrument-making, mining, smelting, and salt works, and foreign companies form the majority of these companies. As Sir R. H. Inglis Palgrave points out:—

"Among them (the banks) is one which controls mines at Bochum, a place which is in the centre of the "iron" industries of Germany, not far from the enormous works of Krupp & Co., which are known throughout Europe. Another carries on a factory for working in cast steel, the business of another is to establish waterworks on the continent of Europe, another works mineral oil, another salt works and salt baths; some undertake mines and smelting works, others smelting works only, others work in aluminium, others in copper and brass, and in making metal screws. We may also mention, to show the varied industries assisted, that the bank also appoints the vice-chairman of a company which makes the machinery employed in the works required for storing electricity in connexion with different industries, for works employed by companies which deal with the transmission of mechanical power, and also for companies established to supply the requirements of railways, and also for those of light lines used in agriculture. They are also connected with eight insurance companies, both for life insurance and insurance of goods which are transmitted by sea and river and by land. It is easy to see how these different industries may assist each other by undertaking different parts of a considerable undertaking. To control these

* 3rd edition, Jena, 1910.

various industries the Deutsche Bank's representative is the chairman or vice-chairman of the governing bodies of 50 important companies at least. Among these companies there are 13 banks, including the Reichsbank, on the advisory board of which its representative has a place. The Deutsche Bank is also represented by six directors on the board of the Deutsche-Ueberseeische Bank, which had been founded by the Deutsche Bank in 1893." *

The Grossbanken, accordingly, have played an important part in the industrial development of Germany since 1870, and chiefly since 1888, which marks the beginning of a period of vigorous development.

18. *The systematic collection of deposits.*—It is important to examine the methods by which the banks collect deposits. Although, as already noted, the banks are not uniform in their business policy, yet it is possible to summarize their methods of collecting deposits. In the first place there are, in addition to the main offices, 'Filialen', or branches; secondly, Kommanditen and agencies. It is difficult to find an exact English equivalent of Kommanditen but 'silent partnership' is, perhaps, the nearest equivalent. 'Commandites' were originally private houses in which the Grossbanken had a share of the profits owing to their having supplied capital, *e.g.*, Dreyfus & Co. in Frankfort-on-the-Main, and S. Kaufmann & Co., in Berlin, in the case of the Commerz-und-Disconto Bank. Thirdly, there are the Depositen-kassen, or deposit offices, which are in conspicuous parts of German towns. As the name suggests, these Depositen-kassen are mainly for the collection of deposits from the public, but all Depositen-kassen, while established principally with this end in view, are not worked within the same limits. The increase in the number of these branches and the progress of concentration is shown in the following table:—

Data for the Eight Great Banks.

End of year.	Number of establishments (main office and branches) in Germany.	Deposit and exchange offices in Germany.	'Commandite' connexions with banking houses in Germany.	Permanent participations in German Joint Stock Banks, etc.	Sum total of Institutions.
1895	18	23	13	2	59
1896	20	27	14	2	63
1900	25	53	12	9	99
1902	33	87	11	16	147
1905	46	149	12	34	241
1908	69	264	12	97	442

It will be seen that these Depositen-kassen have increased, especially since 1897, when the Bourse Law which accelerated the movement of concentration became effective. These were primarily for the convenience of customers. They were intended to facilitate connexions between the banks and holders of cash, especially the smaller tradespeople. At the same time they were to take the place, to some extent, of the rapidly disappearing private banking houses and to facilitate the placing of securities issued by the parent bank. Although these "deposit branches" were originally established with the object of attracting deposits and dealing in securities on a commission basis they found it necessary to extend their operations and at the present time they are more or less complete banking institutions. They have continued to bring a growing circle of customers who purchase the bank securities and thus strengthen the banks' issuing power. By means of these, too, the banks are able to extend their cheque, giro, and clearing business, and thus to diminish the need of cash and at the same time to develop credit. A German writer has summed up other advantages as follows:—

"Through the activity of the bank the deposit is made to perform several economic tasks at one and the same time. The same sum which the customer has entrusted to the bank may be used by him for business purposes, the manufacturer being able to make contracts, the merchant to order goods, etc., on the strength of his bank balance; the banker uses the money for his own purposes, granting a loan to a customer. The customer, again—say, a manufacturer—uses the loan to pay his workmen, who in turn use it to make purchases; and all these transactions take place during the intervening few weeks while the deposit remains at the bank. Thus, the same sum has performed several economic functions at the same time and in so doing has rendered to the public several times the amount of service that it could have done without the intervention of the bank. Herein lies the main advantage of the banks for the money circulation, an advantage which is not sufficiently appreciated."

The increase in the deposits of the Commercial Banks is shown in column 8† of table in Appendix IX.

* Bankers' Magazine, June 1916.

† In the balance-sheets of the banks there is no uniformity in the distinction between "credit accounts" and "deposits". Some banks, for example, mention under "deposits" credit accounts held by their deposit and exchange offices. Others place commercial deposits, *i.e.*, those withdrawable without notice, under "credit accounts".

19. *The Lending of Credit by the Banks.*—The chief ways in which the Commercial Banks lend their credit are :—

(1) by discounting mercantile bills ;
(2) by acceptances ;
(3) by unsecured credit or Blankokredit ;
(4) by secured overdrafts on current account ;
(5) by advances on goods and goods in transit ;
(6) by advances on book debits ;
(7) by advances on securities.

In this seventh class of business may be included the *report*, or contango, business.

Of these, secured overdrafts on current account are by far the most important, followed by the discounting of bills, acceptances, and advances on securities. Blankokredit is the next important as a rule. Advances on goods and book debits are of comparatively small importance. The balance, sheets of any of the Grossbanken will show this very clearly.

(1) Firstly, as regards *advances on discounts.*—The prime discount bills throughout the German discount market are the acceptances of the six foremost Berlin banks, namely, the Deutsche Bank, the Disconto-Gesellschaft, the Darmstädter Bank, the Dresdner Bank, the Berliner Handels-Gesellschaft, and the A Schaaffhausen'scher Bankverein, as well as two private banks in Berlin, Mendelssohn & Co. and S. Bleichröder. According to the regulations of the Berlin Bourse these prime bills must be payable in Berlin or at a place where there is a branch of the Reichsbank ; they must be at least 5,000 marks in amount, and run not less than two, nor more than three, months. In fixing and quoting actual market rates of private discount no difference is made between fifty-six-and ninety-day-bills. The acceptances of the largest mercantile houses and industrial concerns are not regarded as prime discounts, but these firms do not generally regulate their obligations by means of their own acceptances, but as a rule by those of their banks. The margin between the private discount of prime bills, and the quotation for commercial bills, amount approximately to $\frac{1}{4}$ to $\frac{1}{8}$ per cent, just as in London, where the difference between bank and trade bills is about $\frac{1}{2}$ per cent. In dealing with a firm abroad the purchaser of goods advises the seller as a rule to draw the bill of exchange for these goods (maturing after several months) not on himself, the purchaser, but on his bank. The seller is then able to discount more advantageously the acceptance of one of the well-known banks than that of a mercantile firm.

(2) *Acceptances, i.e., a bill of exchange accepted by the banks and placed at the disposal of their customers.*—Excessive acceptance credit is looked on with disfavour by some German financial authorities who have stigmatized these as kite-flying, or accommodation, paper *. There is a considerable danger, it is alleged, especially when short-time acceptance credit is resorted to for purposes other than that of supplying temporary deficiencies in operating funds. Such credit is often not repaid at maturity, *i.e.*, the acceptance is replaced by a new bill issued by the borrower of industrial credit. The bill is accepted by the bank, and taken by the borrower to another bank, who discounts it ; with the proceeds the old acceptance is taken up. To the banks this form of granting credit presents the advantage that it requires no effective funds. The greater portion of bank acceptances originates through domestic and foreign trade transactions. The difference between current account credit and acceptance credit is that the borrower receives cash in the former case and an accepted bill in the latter.

(3) *Blankokredit.*—Blankokredit is an unsecured overdraft on current account. The banks grant unsecured credit only when after a study of the applicant's financial standing it is established beyond doubt, as far as practicable, that the loan will be repaid in time. Information is collected by A. Schimmelpfeng, Berlin, and similar firms. Schimmelpfeng has private agents throughout Germany. The banks will give information to Schimmelpfeng in the interests of trade. Each piece of information is paid for at a lower rate by subscribers than by non-subcribers. The banks in giving such credit may inspect the firms' books if they wish. The use of this form of credit is not so extensive in Northern Germany as it is in Central and Southern Germany. It is seldom granted to other than business men, at least not in large amounts.

(4) *Overdrafts on current account* form a very large part of the credit operations of the banks. They are one of the main sources of commissions earned by the banks. These current account advances are those by which the borrower can obtain cash or credit up to an amount which has been agreed upon between the bank and its client. The credit may be secured by a general hypothecation of the assets of the firm, and may include raw materials, plant, manufactured goods, the land belonging to the factory or firm. It is also possible to secure an advance on current account by sureties. The bank does not hold the goods as in the case of advances on goods. "The security", says Riesser, "for credit on current account, or for credit given on current account through acceptance, collateral loans, or bill discounts consists as a rule of shares, bonds, merchandise, bills, or the outstanding accounts of the borrower, that is, of claims arising from the sale of merchandise and manufactures, or of raw materials, half-finished or finished products belonging to the firm receiving credit, or of life insurance policies, patents, mortgages†, dwelling-houses, factories, land, or sureties, including secondary and counter-sureties (Nach ünd Ruckbürgschaften) and the like".

* When there is no security for these acceptances, and when they are continually renewed, they are "kites".
† A guarantee mortgage *i.e.*, a mortgage which is not intended to be permanent, as in the case of Mortgage Banks

(5) *Advances on goods and goods in transit.*—The creditor may wish to hold the goods until better prices are obtainable, or he may manufacture goods which are consumed in certain seasons of the year. The banks take as security the goods. The amount of business done in this way is insignificant. The banks, to be fully secured, must have the goods in their actual possession. This, however, is not in the interest of the merchant as it might damage his reputation or credit.

(6) *Advances on book debits* *.—This system has been introduced into Germany from Austria, France, and the United States of America, and has not been, and never will be, popular. Such an advance is made only after investigation by the banks' officer who examines the books and enquires about the solvency of the debtor. The book debit must be due within three months. The bank advances money on the debtor's giving a bill on himself (promissory note). The advance is only from 50 to 75 per cent of the debt, and the amount of the debt must not be less than 200 marks. The bank reserves to itself the right of informing the purchaser of the goods that the prior claim has been ceded to the bank.

(7) *Lombards, or advances on Securities, including Contango, or Report, business.*—Advances on securities, or Lombards, form a considerable portion of the banks' credit business. The securities consist chiefly of listed securities. The stipulated margin on the paper differs according to its quality; it is larger in the case of stock than of paper bearing a fixed rate of interest. In case of a fall in prices the margin is maintained by an increase in the deposit or by a corresponding reduction of the credit balance. The average margins are:—

In the case of German securities bearing a fixed rate of interest, 10 per cent.

Foreign securities, 20 per cent.

Domestic Stock Shares, 25 to 33⅓ per cent.

Foreign Stock Shares, 25 to 50 per cent.

A large portion of the advances on securities are merely speculative loans for dealing in securities. Loans of this nature are a source of continual worry to the banks. In a rising market the banks' clients are inclined to deal to a great extent in such dealings as to cause inconvenience to the banks. In a falling market the banks have to demand an additional margin. If the clients cannot pay this additional margin the banks sell the clients' stock. The ultimate recourse of selling the security is avoided as far as possible as it involves a loss to the client. The banks, too, are lenient in order not to impair the success of their own future issues. Moreover, the banks regard it as a rule not to refuse assistance to their borrowers, especially in times of stringency. In addition to this Lombard business is the report, or contango, business (Stock Exchange loans). The loan is for one month for which time the bank becomes the real owner of the securities.

20. The Commercial, or Credit, Banks have sometimes incurred serious losses, especially during the bubble era (Grunderjahre) in the seventies. The Berliner Handels-Gesellschaft, for example, financed in 1876 the construction of a railway called the Muldetalbahn which two years later had to be sold to the Government of Saxony at a loss of 6⅔ million marks. The bank had a capital of 45 million marks which was reduced to 30 millions and afterwards to 20 millions. In 1908 the capital of the bank stood at 110 millions. The Leipziger Bank failed in 1900 because, with a capital of 48,000,000 marks, it had allowed loans to the extent of 93,000,000 marks to the Trebertrocknungsgesellschaft (company for the utilization of desiccated lees). The Dresdner Kreditanstalt für Handel und Industrie went under because it had extended too much credit to the Kummergesellschaft. Industrial credit, it must be remembered, is less developed than commercial credit. In looking back over the history one notes that, through ignorance of correct principles, *e.g.*, industrials, took too much long-term credit from the banks, or took credit at the wrong time to put into improvements or extensions sometimes without stating these to be the object of the loans, and sometimes some banks thrust credit upon industrial undertakings. The banks sometimes disregarded the principle of distributing the risk, giving too much credit to one industry, or one branch of industry, or even to a single establishment.

21. The banks as a general rule, it may be noted, invest their funds in such a way as to be ready to pay one-third of all outsiders' funds (Fremde Gelder), irrespective of whether payable on demand or after longer or shorter terms. These funds include deposits (depositen), the credit balances on current account, and other balances not on credit account, "resulting from loan operations, and other issue business, or from the coupon service, or from interest bearing funds held until settlement day to the credit of domestic and foreign states, provinces, districts, communes, commercial and industrial concerns, land banks, note banks, and other banks, insurance companies, administrations, corporations, institutions, foundations, and private capitalists"†. The resources kept to meet such a contingency are cash, including bank notes, sight drafts, cheques, contangos (reports), bills realizable in international markets, also the "nostre" credits, *i.e.*, credits held with first-class domestic and foreign banks and banking firms.

22. *The Banks and foreign trade.*—Since the founding of the Deutsche Bank in 1871 the Commercial Banks have assisted largely the development of German sea-borne trade. Previous to 1870 the financial regulation of German foreign trade was almost exclusively in

* Advances on book debits are not unknown in Indian banking. Jute mills and other public companies hypothecate their outstandings in such cases to the banks.

† Riesser, chapter III, section I.

the hands of London banks. The charter of the Deutsche Bank contains the following sentence :—"It is the purpose of the corporation to do a general banking business, particularly to further and facilitate commercial relations between Germany, the other European countries, and oversea markets". The founders of the bank recognized that there was a gap to be filled in the organization of the German banking and credit system in order to render German foreign trade independent of the English intermediary. The establishment of a gold standard in Germany in 1873 facilitated this. Before 1873 Germany had a silver standard and bills of exchange made out in various kinds of currency were disliked in the international market. London is the only place outside Germany where the Commercial Banks have established agencies*. The Deutsche Bank in the early seventies established agencies in Shanghai and Yokohama, but these were liquidated owing to the losses in exchange consequent on the depreciation of silver. To further foreign trade, however, the banks established subsidiary banks, with the main offices in Berlin and Hamburg; these banks in their turn established agencies in oversea countries, the capital of which almost, if not entirely, belonging to the parent banks. The banks, as will be seen in Appendix X, have taken a considerable interest also in foreign trading companies. The Deutsche Bank's interests in this respect may be taken as typical :—

Foreign Companies.	*Seats on the Board of Directors.*	
Anatolische Eisenbahn-Gesellschaft, *Constantinople*	Two	(Chairman).
Bagdad Eisenbahn-Gesellschaft	Two	(Chairman).
Bank für elektrische Unternehmungen, *Zürich*	Two	(Vice-Chairman).
Bank für orientalischen Eisenbahnen, *Zürich*	One	(Vice-Chairman).
Betriebsgesellschaft der orientalischen Eisenbahnen, *Vienna*	One	(Vice-Chairman).
Compañía *Barcelonesa* de Electricidad	One	
Eisenbahn-Gesellschaft, *Mersina-Adana*	Two	(Chairman).
A. Goerz & Co., Ltd., *London*	One	
Gesellschaft für elektrische Beleuchtung, *St. Petersburg*	One	(Chairman).
National Bank of South Africa, *London*	One.	
Société du Chemin de Fer Ottoman, *Salonique-Monastir*	Two	(Vice-Chairman).
Société du Port de Haider-Pascha, *Constantinople*	Three	(Vice-Chairman).
Steaua Romana, A-G für Petroleumindustrie, *Bucharest*	Two	(Chairman).

23. While the Indian banker has to deal with the request of his individual customer the German banker has, it will be seen, to take up a different position. He has to be ready to become a director of the company which he assists and to be familiar with the general conditions of that industry in order to control the necessary expansion. As Riesser puts it:—

"Above all, they (the banks) must promote all the economic interests of the nation, *i.e.*, the interests of all producing classes without distinction, in so far as the services and the credit required by them come within the sphere of banking activity, and do not conflict with the necessary premises of sound banking policy" . . . . "In the next place they have to keep the amount of credit to be granted within reasonable bounds, and to offer, as far as is within their power, the utmost opposition to an unsound demand for credit. The banks must, therefore, endeavour to obtain at all times a comprehensive and accurate insight into the general conditions of the branches of industry and trade chiefly dependent on them for support in order to be able to discriminate between necessary requirements and false hankerings after expansion and aggrandizement. They should also be able to intervene, or at least restrain and check, in cases where the form and extent of the credit received cause the fear of unsound development."

Some time ago Mr. G. H. Pownall in his inaugural address as President of the Institute of Bankers† dwelt on the constitutional differences, already noted, that exist between the English banks (composed of bankers in the strictest sense) and the German banks (composed of traders and company promoters). He said that development companies skilfully handled might introduce much new and good business in England and if, like the German banks, they once got a deserved reputation for the soundness of the ventures which they introduced they might, with fair readiness, place the shares of the companies they initiated on the English market. English banking, he pointed out, had gone on the lines of "every man for himself", while the German Government had thrown its shield round every German trader.

In short, it is manifestly clear that the Commercial Banks of Germany have promoted commerce and industry in ways which, in Indian, as in English, banking, would be looked on as outside the scope of banking proper. In this connexion the balance-sheet of the Bank für Handel und Industrie (Appendix XI) brings out strikingly the main differences that have been referred to above.

* The Deutsche Bank, the Disconto-Gesellschaft, and the Dresdner Bank had branches. The business transacted was large. Over and above the assets of the three banks there were securities lodged to the value of £20,000,000. The Deutsche Bank had documentary credits to the value of £35,000,000 and its uncovered credits to £7,500,000. *Cf.* "The Times", October 27th 1916.

† *Vide* "The Times", November 9th, 1916.

III.—Industrial Banks in General.

24. The Industrial Bank of Japan is an interesting example of a bank founded primarily to develop industry. It was founded on the French model—on the Crédit Mobilier of France*. It assists industry just as the Hypothec Banks assist agriculture. The Hypothec Bank of Japan and the Agricultural and Industrial Bank (the latter being a Joint Stock Company established in every prefecture†) were engaged in making long-term loans on the security of immovable property and the need arose for a bank which could advance long-term loans on the security of Government bonds, shares, and movable property. It was also deemed advisable to combine in such a bank the business of a trust company. A bank was, therefore, established in 1902 as a Joint Stock Company under the law of the Industrial Bank of Japan which was promulgated in March 1900‡. The bank was established with a capital of 10,000,000 yen (£1,024,275) which by an amendment of the law was raised to 17,500,000 £1,792,482) in May 1911. Of the fully paid-up capital (17,500,000 yen) 7,500,000 yen is held by foreign capitalists. The bank is authorised to issue debentures to an amount not exceeding ten times its paid-up capital provided that the amount of such debentures shall not exceed the total amount of outstanding loans, discounted bills, national or local loan bonds, companies' debentures and shares, and the gold and silver bullion in the bank's coffers. The bank, with the approval of the Minister of Finance, may issue debentures irrespective of these restrictions in the event of funds being required for enterprises for public benefit undertaken in a foreign country. The business of the bank is under the direct control of Government, which appoints the Governor and Deputy Governor in addition, it is understood, to holding a very considerable portion of the share capital. The bank had a Government subsidy to the extent of a guaranteed 5 per cent dividend for five years after its establishment.

25. The authorized and paid-up capital, together with the reserve fund, was as follows:—

Year.	Authorized capital, yen.	Paid-up capital, yen.	Reserve fund, yen.
1905	10,000,000	5,000,000	294,100
1906	17,500,000	13,750,000	409,100
1907	17,500,000	16,250,000	623,200
1908	17,500,000	16,250,000	993,000
1909	17,500,000	16,250,000	1,364,000
1910	17,500,000	16,250,000	1,669,000
1911	17,500,000	17,500,000	1,969,000
1912	17,500,000	17,500,000	2,269,000
1913	17,500,000	17,500,000	1,640,944
1914	17,500,000	17,500,000	1,776,000

Ten years ago the paid-up capital was only 50 per cent of the authorized capital of 17,500,000 yen. In 1914 the total capital was entirely paid up. The increase in the reserve fund was continuous up to 1912. At the general meeting held in 1913 it was

*The Crédit Mobilier (Société Générale de Crédit Mobilier) was established in the same year as the Crédit Foncier (1852). It was formed in order to promote industrial and financial enterprises. Unlike the Crédit Foncier it was free from Government control. It was constituted with a capital of 60,000,000 francs and with their power of issuing bonds for 600,000,000 francs. Between 1852 and 1867 it succeeded in establishing and aiding numerous railway, gas, shipping, loan and insurance companies, banking institutions, etc. The Crédit Mobilier was reconstructed in 1871. In 1902 it combined with the Office des Rentiers, and the new company's capital was fixed at 45,000,000 francs. Upon the model of the Crédit Mobilier numerous other banks have been established, *e.g.*, the Crédit Industrial et Commercial, the Crédit Lyonnais, and the Société Générale, with original capitals of 60,000,000, 20,000,000, and 120,000,000 francs (now 100,000,000, 250,000,000 and 500,000,000 francs).

It may be noted that, just as the Industrial Bank of Japan took the Crédit Mobilier as its model, the Hypothec Bank of Japan (which acts mainly as the financial medium of agriculture) was founded on the lines of the Crédit Foncier. The Crédit Foncier was granted in 1852 a Government subsidy of 10,000,000 francs and its capital was then increased to 60,000,000 francs. In 1853 and 1856 the Crédit Foncier was granted certain privileges and placed under strict supervision by Government. In 1860 the Crédit Foncier founded the Crédit Agricole which was absorbed in 1877 by the Crédit Foncier itself. In 1882 it bought up the Banque Hypothecaire. The operations of the Crédit Foncier are of two kinds:—

(1) loans for short terms (so-called), repayable in ten years at most; and

(2) loans for long terms, payable by annuities.

† These provincial Hypothec Banks (Noko Ginko) act as local banks for agriculture and industry, each with a capital of 200,000 yen or upwards. The lines of business transacted by these banks are similar to those dealt with by the Hypothec Bank, only in a smaller degree.

‡ Law No. 70 (1900). The Law and the Bye-laws of the Industrial Bank of Japan will be found in Appendix XIII.

reported that the bank had incurred losses of 2,799,757 yen against profits amounting to 3,287,257 yen. The losses were caused owing to the depreciation of the market value of 4 per cent bonds and 5 per cent bonds by the bank, the outstanding loans to Hasami and Washinosu gold mines (4,100,000 yen), and other items of minor importance. To redeem this loss it was arranged that the bank should receive a loan of 13½ million yen at a low rate of interest from the Bank of Japan and the Yokohama Specie Bank*.

26. The business of the bank includes the following:—

(1) Advances on the security of national or local loan bonds or debentures, or shares of companies;

(2) Subscriptions for, or taking up, national or local loan bonds or debentures of companies;

(3) General deposit; banking; also accepting the custody of articles of value (safe deposits business);

(4) The business of a trust company. (This business has recently developed to a great extent. The passing of the Law of Trust for Secured Debentures and the Railway, Factory, and Mining Mortgage Laws in 1905 made this rapid development possible.)

(5) The discounting of bills and general exchange business;

(6) Advances or loans on the mortgage of railways, factories, and mines as prescribed by Law 70 of 1900;

(7) Making call-loans or loans for a fixed term on the security of sites and buildings belonging to factories or of residential land and buildings lying in localities where the City Organisation Law is in force or in city land to be designated by Imperial Ordinance provided that the total amount of such loans shall not exceed one half the amount of paid-up capital†;

(8) The purchase of national or local loan bonds or companies' debentures and shares or gold and silver bullion with money lying idle in the course of business;

(9) Lastly, as already noted, any banking attendant business in foreign countries, with the permission of the Minister of Finance.

The foreign loans negotiated directly by the Industrial Bank, and for which it has acted as trustee or guarantor up to 1911‡ are:—

Name.	Date of Issue.	Amount.	Rate of Interest per cent.	Place of Issue.
Japanese Government 5 per cent Bond Loan	October 1902	Y. 50,000,000	5	London.
Hokkaido Colliery Railway Debentures	January 1906	£ 1,000,000	,,	,,
Tokio City Loan Bonds	July 1906	£ 1,500,000	,,	,,
South Manchurian Railway Debentures	July 1907	£ 4,000,000	,,	,,
Ditto ditto	June 1908	£ 2,000,000	,,	,,
Fuji Paper Manufacturing Company Loan	August 1908	Y. 1,500,000	6½	Tokio.
Industrial Bank of Japan Shares	March 1906	Y. 7,500,000	,,	London.
South Manchurian Railway Debentures	December 1908	£ 2,000,000	5	,,
Osaka City Loan Bonds	April 1909	Y. 30,220,000	,,	,,
Yokohama City Loan Bonds	July 1909	£ 716,500	,,	,,
South Manchurian Railway Debentures	January 1911	£ 6,000,000	4½	,,
Fuji Paper Manufacturing Company Loan	March 1911	£ 155,000	5½	Tokio.

It will be seen that the scope of the business of the Industrial Bank of Japan is limited, in the main to making loans on the security of national bonds, local loan bonds, or shares of

* The loans to the mines may perhaps after a period of years be recovered.

† This precludes the bank from engaging on business which belongs to the Hypothec Bank.

‡ *Vide* p. 251 of the "Full Recognition of Japan" by R. P. Porter, Chapter XIII.

companies, receiving deposits of money, and to undertaking trust business in relation to local loan bonds or the debentures and shares of companies.*

27. The Industrial Bank of Japan, although the youngest of the six special banks †, has made very rapid progress as will be seen from the table in Appendix XII. These figures may be summarized thus :

	Ten years ago (1906) 1,000 yen.	Five years ago (1910) 1,000 yen.	1914 1,000 yen.
Paid-up capital	5,000	16,250	17,500
Reserve Fund	294	1,669	1,776
Deposits	1,436	8,875	16,675
Advances—			
(*a*) Loans	2,475	26,233	30,132
(*b*) Bills discounted	2,012	3,567	30,716
(*c*) Total	4,487	29,800	60,848
Profit and Loss Account—			
(*a*) Earnings	1,391	4,293	5,540
(*b*) Expenses	1,134	2,636	4,209
(*c*) Net profit	257	1,657	1,332
(*d*) Rate of Dividend per cent.	7	8	6·5

28. *The British Trade Bank.*—A departmental Committee was appointed by the Board of Trade to enquire into "the best means of meeting the needs of British firms after the war as regards financial facilities for trade, particularly with reference to the financing of large overseas contracts, and to prepare a detailed scheme for that purpose". The question was an old one which the tonic of war had brought to a head. It was the question of the financial facilities granted to British traders by the existing banks, especially as compared with those afforded by the Commercial Banks of Germany. The committee contained representatives of banking, commerce, and industry, and was presided over by Lord Farringdon. The committee insisted that existing institutions left little undone in the way of providing sound financial facilities in the past, and could not be said to have starved home industries. "British bankers", they said, "are not shy in making advances on the strength of their customers' known ability and integrity, and the charges for accommodation are, we believe, often lower than the corresponding charges in foreign countries". "Similarly", they added, "the colonial banks and British foreign banks and banking houses render immense assistance to British trade abroad." The committee, however, believed that there was ample room for an institution "which will not interfere unduly with the ordinary business done by the British Joint Stock Banks, by colonial banks and by British foreign banks and banking houses, but would be able to assist British interests in a manner that is not possible under existing conditions". A concrete scheme was put forward, for a new type of bank, fortified with a Government charter, working with a large capital, but not taking deposits at call or short notice as the Grossbanken and the English Joint Stock Banks did. The bank would not open current accounts except for actual traders using its facilities. It should have a foreign exchange department where special facilities might be afforded for dealing with bills in foreign currency, and it should open a credit department for the issue of credits to parties at home and abroad. The *raison d'être* of the bank is, among other things, to give longer credits than ordinary banks and to supplement the business done on a less "adventurous" basis than those banks which attract deposits. The committee laid much stress on the part which the new institution would play in obtaining with its Bureau d'études complete and up-to-date information, especially as to the status of firms, in the study of foreign languages, and in the staffing of the bank by experts who would, in the three proposed and distinct departments, financial, industrial, and commercial, be in a position to deal thoroughly with all matters for consideration. As The *Times* pointed out with regard to longer credits than English banks ordinarily give "That is, of course, just what our manufacturers have been asking for, and, in essentials, a new institution on these lines has, as we have always said, its own special sphere only too obviously cut out for it. There is no reason why it should not be added at once to our financial system on a commercial basis, and made to pay, directly and indirectly, if competent

* Appendix XIII, page 37.

† The Special Banks are the Bank of Japan (1882), the Yokohama Specie Bank (1880), the Hypothec of Japan (1896), the Industrial Bank of Japan (1902), the Bank of Taiwan (Formosa) (1897), and the Colonial Bank of Hokkaido (1900). The total number of banks of all descriptions at the end of June 1914 was 2,159. The Government of Japan, when necessary, can assist industry and commerce through these banks, in order, for example, to relieve the tension in the money market, as in 1914-15 when rice had fallen in price. This chronic depression was made worse by the outbreak of war. Government requested the Bank of Japan and the Specie Bank to give every assistance to importers and exporters as regards exchange transactions and made the Hypothec Bank and the Provincial Hypothec Banks accommodate loans to small manufacturers in the provinces, to the extent of 5 million yen, and the Industrial Bank to advance within the limit of 3 million yen to those in cities.

management is forthcoming. Where the scheme, as much too briefly explained in the report, is bound to meet with criticism is in its connexion with the Government. On the one hand, it is proposed that the new bank shall 'not unduly interfere' with the business done by existing commercial firms or institutions and should not actually be "under Government control". On the other hand, besides a Royal Charter†, it is proposed to give it in various respects a privileged position, and apparently a preference, in respect of Government financial assistance towards creating new business in the foreign, and even in the home, field in a way which looks like necessarily bringing into competition with ordinary private enterprise possibly to the serious disadvantage of existing financial houses. Alternatively it is proposed, by means of the credit attaching to Government support, to enable it to take just the bad risks that no other capitalist will finance —a rather doubtful benefit ultimately to the public. On all this part of the scheme, so far it connects the Government with the bank, we should have preferred discussion than the report vouchsafes". This has been quoted *in extenso* to show the difficulties in the way of the creation of the industrial banks, difficulties which are frequently apt to be slurred over. The very conservative, although admittedly sound, system of English banking has, many think, justified itself in the past, and before an industrial bank should be founded it should be examined (1) as a promising business proposition in regard to those who may be called upon to invest in its shares; and (2) without any idea of making use of public sentiment for the immediate creation of such an undertaking. A critic pointed out that "More than one banker of experience with whom we have discussed Lord Farringdon's report has summed up the position by saying that, given the immediate establishment of the proposed Trade Bank on these lines, and given an immediate adequate response as regards the subscribing of the capital mentioned, he would be very sorry to be in the position of having immediately to set to work and earn dividends for the shareholders". The advantages of greater banking facilities are all too obvious. In India as in the United Kingdom there are three currents of opinion among bankers and traders. These are well summed up by Sir Francis Piggot in a letter to the *Morning Post* of September 26th, 1916 :—

"First, many believe that no new institution is necessary; that industry already receives all the financial assistance it requires, and that the good old way of doing business cannot be improved.

"Secondly, the opinion is strongly held by others that there is a great need for an institution which would finance contracts with foreign Governments and corporations which provide for payment by 'non-marketable' securities which, however sound they may be financially, are not acceptable by the Joint Stock Banks as security for advances . . .

"Thirdly, among traders there is an equally strong opinion that British industries stand greatly, and immediately, in need of what I may call 'development advances' and that this is not necessarily confined to the creation of new industries or to the fostering of oversea commerce. In this connexion it is specially held by a few, who speak with experience that those who are in most urgent need of this form of advance are the medium and small manufacturers who, although they have perfectly sound business, yet for various reasons cannot avail themselves of the existing form of banking facilities nor are sufficiently large to warrant conversion into limited companies."

The committee's proposals are summed up in paragraph 24 of their report, which is quoted in Appendix XIV†.

29. According to the "Gaceta De Madrid" of 2nd October 1916 a Trade Bank is proposed for Spain. The decree authorizes the Minister of Finance to present to the Cortes a bill known as the Banco Espanol De Comercio Exterior, with its headquarters in Madrid. The capital of the bank is to be not less than 40,000,000 pesetas, or £1,600,000 at par, and will be fixed by Government. It is to be subscribed either by competition between Spanish banking concerns or by public subscription. The shares in the hands of foreigners must not exceed one-fifth of the capital issue. The State will give an annual subsidy to the bank of a maximum sum of 5 per cent of its share capital. The business undertaken by the bank is as follows:—"The granting of credit to facilitate the export of goods of all kinds, and the import of raw materials and accessories for agriculture and national industries; the discount, purchase, and sale of international drafts in any currency; the opening of credits in foreign money operations abroad; the "nationalization" of acceptances and drafts resulting from the importation of foreign merchandise; the establishment of general merchandise warehouses and of free zones; the formation of information bureaux and commercial museums; the granting of loans for guaranteeing vessels; and maritime insurance.

30. *Summary—The financing of Indian industry after the War* :—It will be convenient to summarize what has, in a somewhat platitudinous way, been dealt with in previous paragraphs. The three main points to which attention is directed are:—

(*a*) the introduction of industrial banks into the Indian banking system;
(*b*) the establishment of a network of branch banks; and
(*c*) the development of the present system of banking to meet the changed circumstances brought about by the war.

(*a*) After the war Indian industry will require financial assistance in a fairly large way because (1) new schemes for the development of industries will demand, and receive, more

† Extracts from the Royal Charter of Incorporation of British Trade Corporation will be found in Appendix XV.

encouragement than hitherto; (2) old industries will require to be renovated or overhauled; and (3) in order to enjoy the economies of large-scale production such industries will have to be conducted on a much larger scale. This means that the *organized* aid of banking, especially in the higher direction of Indian industry, will be advantageous, if not essential. The problem before us is to discover whether the undoubted merits of the German system of co-ordination of industry with finance can be secured, due allowance being made on account of dissimilarity in local conditions, whether, in short, the example of the German Credit Banks (Grossbanken), which undertake the responsibility for industrial issues, could not be followed in the development of industrial financing in this country. Indian banks, with, perhaps, the single exception of the Tata Industrial Bank, do not accept any responsibility to the public as regards issues of any sort, even when their name appears on the prospectus. The German Credit or Commercial Banks, on the other hand, undertake the responsibility for industrial issues, and this is the keystone of their close relations with German industry. In the so-called "heavy" industries (mining, iron and steel) and in the light industries (the electrical industry, petroleum enterprises, breweries, etc.), these banks have been not only financial advisers, but, in some cases, even controllers of industrial concerns. They carry through the reorganization and the promotion of industrial concerns; they examine and nurse new schemes until they are ripe for public investment. In Berlin all the bankers are members of the Stock Exchange and it is part of a German bank's business to act the part of a stock-broker. These banks encourage new undertakings, and allow acceptances and acceptance credit to be freely used. The Grossbanken are, as it were, the General Staff of German industry, the brains of the Industrial Army. Firms like the Allgemeine Electricitäts Gesellschaft, as compared with small firms, are like a highly-trained army attacking ill-trained troops in the field. "One difference", said a German Bank Director before the American Monetary Commission, "between the banks of England (and he might have equally truly said of India) and Germany is that in England the primary purpose of the banks seems to be to secure large earnings for their shareholders. In Germany our banks are largely responsible for the development of the Empire, having fostered and built up its industries". The truth of this remark is shown in Appendix X where the companies on the directorates of which the Grossbanken are represented are surprisingly numerous. It is true that Indian banks are, so far as strictly banking and temporary assistance to industry are concerned, fairly liberal, but, with the exception of the Tata Industrial Bank, floated only some months ago, these are deposit banks the watchword of which must be safety and liquidity. It cannot be expected that industrial banks, with their funds invested for long periods, can earn high dividends, like the Presidency Banks or the Exchange Banks. The Presidency Banks and the Exchange Banks earn dividends from 12 to 18 per cent or even more, while the German Commercial Banks earn from 7 to 8 per cent. There are two other advantages of industrial banks on the Grossbanken model, the first of these being that the company promoter is not left, as in India, with new schemes. The company promoter is concerned mainly with the success of the issue, and is often regardless of the future welfare of the business. The expression "company promoter" has sometimes a sinister significance to the investing public* and he does not always bear the imprimatur of an institution which would guarantee that the business has been thoroughly investigated and will be looked after when the issue has been made. The other advantage is that if financial assistance to industry on the part of Government is deemed to be necessary, industrial banks are convenient media through which such assistance can be most safely given. For further references to industrial banks, other than those quoted above, the Charter of the British Trade Corporation, the article on "Industry and Finance" in *The Round Table* (December 1916), and that on "Industrial Banks—Their place in Industry and their Sphere of Usefulness" in the *Times of India* (1st and 3rd December 1917) should be read.

(*b*) *Next as to the establishment of a network of branch banks.—There are 71 head offices with 267 branches and agencies in India including Burma.*—In the United Kingdom there are 65 banks with no less than a total number of offices of 9,138.† The location of these branches is discussed in the introduction memorandum on "Indian Banks in War Time" published in the third issue of the Blue-Book on Banks in India (1917)‡. A Bill has recently been brought in by the Ministry of Finance for the renewal of the charter of the Bank of France and it provides for, among other things, the opening, in the next twelve years, of 12 new branches, 25 subsidiary branches, and also special offices in 50 provincial towns, including Cantons having more than 6,000 inhabitants. The bank also undertakes to act as a clearing-house for local bills and local paper issues, with the result that credit facilities will be made available in the most remote districts of France. In regard to this Bill the *Times of India* wrote:—"The Presidency Banks have not that monopoly of the Note issue, which is exceedingly

* The inaugural address of the Institute of Bankers, London, November 8th, 1916 (Mr. G. H. Pownall). "Company promoters do not exist in Germany, and in England they have, as a body, done great harm by their action as intermediaries in converting private concerns into public companies. The company promoter exists to induce the public to take shares in a private concern which he is turning into a limited liability company, and, as a rule, his personal interest is to inflate the issued capital of the new concern to his own personal profit, without regard to its future welfare. This is a serious public evil and demands a remedy. Shall we prohibit the company promoter, and in any substituted system provide that flotations of new companies shall be made only by responsible bodies who have an interest in the continued prosperity of the companies they put on the market?"

† *Statist*—Banking Section—June 2, 1917, page 972.

‡ No. 461—1917.

lucrative to the Bank of France. On the other hand, they have a monopoly of the custody of Government funds, which directly and indirectly, is very valuable. The goal we have to set ourselves is to bring credit facilities in the most remote districts of India. As a first step in that direction we have to lay down a policy which will establish banking facilities in every district headquarters. That ought to be one of the duties thrown on the Presidency Banks in return for the valuable privileges which they enjoy—privileges whose value is attested by the appearance of their balance-sheets. If it cannot be done through the Presidency Banks then the establishment of a State Bank should be regarded as of the greatest urgency"*.

(*c*) Lastly, with regard to the development of the present system of banking, little, if anything, need be said in this note beyond a reference to the memorandum in the third issue of the Blue Book on Banking†. We have not what von Hugel calls that "thirst for system, wholeness, and closely-knit organisation" of Germany ‡, the United States, or even of France. In France the Bank of France assists the "small" borrower, although it cannot by the terms of its charter discount bills for a longer period than 90 days. The bank is not permitted to give differential rates of discount according to the standing of the client or the amount of his bill. This is to the advantage of the small man from whom the bank accepts drafts of from R3 upwards. It takes bills and other instruments of credit sent by clients through the post from districts where no branch of the bank exists. Prior to the war the usual rate of discount on agricultural bills was only 3 per cent. In the United States the Federal Reserve Act§ has given to the United States a complete system of banking, a system which has been since the outbreak of war of the highest possible value. The kernel of the Act is section 13 which relates to the discounting of notes, drafts, and bills of exchange arising out of actual commercial transactions. The Act does not enable banks to borrow on bonds or securities other than those of Government, but it does enable the banks to borrow on business paper. Paper discounted by the bank, in order to be eligible for rediscount with the Federal Reserve Bank, must show that there is a producer and a consumer and must conform to certain well-recognized requirements. The question of rediscounting privileges in a banking system like that of India opens up many questions which cannot be taken up in this note.

31. In concluding this note I must express my thanks to Sir N. H. Y. Warren, Secretary and Treasurer of the Bank of Bengal, Mr. H. Harris, Agent of the Chartered Bank of India, Australia, and China, Mr. W. J. K. Hegarty, Manager of the National Bank of India, Mr. I. Nishimaki, Agent of the Yokohama Specie Bank, and Mr. J. A. Chapman, Librarian of the Imperial Library all of whom I have consulted with points connected with this note. Messrs. Krummacher and Christ, formerly of the Deutsche-Asiatische Bank (now in liquidation) have also rendered much expert assistance in connexion with the description of the working of the Commercial Banks of Germany.

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* *Times of India*, 9th March 1918.

† No. 461—1917.

‡ *The German Soul*—von Hugel, 1916.

§ Sixty-third Congress, chapter 6. "An Act to provide for the establishment of Federal Reserve Banks to furnish an elastic currency, to afford means of rediscounting commercial paper, to establish a more effective supervision of banking in the United States, and for other purposes."

Appendix I.

NAMES OF BANKS IN INDIA, WITH THEIR HEAD OFFICES AND BRANCHES DURING 1916.

(1).—Presidency Banks.

No.	Banks.	Head Office.	Branches and Agencies.
1	Bank of Bengal	Calcutta	Agra, Akyab, Allahabad, Benares, Calcutta—Burrabazar, Clive Street, Park Street—Cawnpore, Chandpore (Pay Office), Chittagong, Dacca, Delhi, Hyderabad (Deccan), Jalpaiguri, Lahore, Lucknow, Moulmein, Nagpur, Narayanganj, Patna, Rangoon, Serajganj (Pay Office), Secunderabad, Simla, Bombay Agency.
2	Bank of Bombay	Bombay	Ahmedabad, Akola, Amraoti, Broach, Hyderabad (Sind), Indore, Jalgaon, Karachi, Poona, Rajkot, Sholapur, Sukkur, Surat, Mandvi (Bombay).
3	Bank of Madras	Madras	Aleppy, Bangalore, Bimlipatam, Calicut, Coconada, Cochin, Coimbatore, Guntur, Madura, Mangalore, Masulipatam, Negapatam, Ootacamund, Salem, Tellicherry, Trichinopoly, Trivandrum, Tuticorin, Bezwada, Erode, Narsapur, Rajahmundry, Vizianagram.

(2).—Exchange Banks.

1	Chartered Bank of India, Australia, and China.	London	Amritsar, Bombay, Calcutta, Delhi, Karachi, Madras, Rangoon, Tavoy.
2	Comptoir National D'Escompte de Paris.	Paris	Bombay.
3	Cox & Co.	London	Bombay, Calcutta, Karachi, Rawalpindi, Murree, Srinagar (Kashmir).
4	Eastern Bank	,,	Bombay, Calcutta.
5	Hongkong and Shanghai Banking Corporation.	Hongkong	Bombay, Calcutta, Rangoon.
6	International Banking Corporation.	New York	Bombay, Calcutta.
7	Mercantile Bank of India	London	Bombay, Calcutta, Delhi, Howrah, Karachi, Madras, Rangoon.
8	National Bank of India	,,	Amritsar, Bombay, Calcutta, Cawnpore, Chittagong, Cochin, Delhi, Karachi, Lahore, Mandalay, Madras, Rangoon, Tuticorin.
9	Russo-Asiatic Bank	Petrograd	Bombay.
10	Yokohama Specie Bank	Yokohama	Bombay, Calcutta.

(3).—Indian Joint Stock Banks.

1	Indian Bank, Ltd.	Madras	Coconada, Madura, Madras (3 branches).
2	Benares Bank, Ltd.	Benares	Bhagalpur, Muzaffarpur.
3	Standard Bank, Ltd.	Bombay	.....
4	Bank of Upper India, Ltd.	Meerut	Allahabad, Bareilly, Delhi, Hapur, Kasauli, Lucknow, Mussoorie, Nainital, Simla.
5	Bank of Mysore, Ltd.	Bangalore	.....
6	Muffassil Bank, Ltd.	Gorakhpur	.....
7	Poona Bank, Ltd.	Poona City	Ahmednagar, Miraj, Sangli, Belgaum, Hubli, Kolhapur.
8	Kumbakonam Bank, Ltd.	Kumbakonam	.....
9	Canara Bank, Ltd.	Mangalore	.....

(3) *Indian Joint Stock Banks*—contd.

No.	Banks.	Head Office.	Branches and Agencies.
10	Bharat National Bank, Ltd.	Delhi	Bhopal, Jammu, Patiala, Sialkot, Srinagar, Wazirabad.
11	Bengal National Bank, Ltd.	Calcutta	Narayanganj.
12	Jessore United Bank, Ltd.	Jessore	.....
13	National Bank of Upper India, Ltd.	Lucknow	.....
14	Co-Operative Hindustan Bank, Ltd.	Calcutta	Dacca, Narayanganj.
15	Gorakhpur Bank, Ltd.	Gorakhpur	Bankipur, Gonda, Bahraich.
16	Allahabad Bank, Ltd.	Allahabad	Allahabad (branch), Amritsar, Bankipur, Bareilly, Benares, Bombay, Calcutta, Cawnpore, Delhi, Hathras, Jhansi, Jubbulpore, Lucknow (3 branches), Meerut, Lyallpur, Nagpur, Nainital, Rae Bareli, Sitapur.
17	Bhowanipur Banking Corporation, Ltd.	Bhowanipur, Calcutta	.....
18	Central Bank of India, Ld.	Bombay	Bombay (3 branches), Calcutta, Karachi.
19	Bank of India, Ltd.	„	.....
20	Bombay Provincial Bank	„	.....
21	Poona Mercantile Bank	Poona City	.....
22	Ajodhia Bank, Ltd.	Fyzabad	.....
23	Bank of Northern India	Rawalpindi	Delhi, Ambala City, Lahore, Murree, Rawalpindi City.
24	Kayestha Trading and Banking Corporation.	Gorakhpur	Chapra, Azamgarh, Basti, Jaunpur, Arrah, Ghazipur, Darbhanga (Laheriasarai), Deoria.
25	Byopar Sahayak Bank, Ltd.	Meerut	.....
26	Bangalore Bank, Ld.	Bangalore	.....
27	Punjab and Sind Bank, Ltd.	Amritsar	Gujranwala, Lyallpur, Lahore, Rawalpindi.
28	Vellore Commercial Bank	Vellore	.....
29	Nedungadi Bank, Ltd.	Calicut	Badagra, Calicut Town, Cherpalcheri, Palghat.
30	Vellore Mercantile Bank	Vellore	.....
31	Woriur Commercial Bank	Woriur	.....
32	Bhargava Commercial Bank	Jubbulpore	.....
33	Oudh Commercial Bank, Ltd.	Fyzabad	Lucknow, Cawnpore.
34	Bank of Rangoon	Rangoon	.....
35	Malabar Bank, Ltd.	Cannanore	.....
36	Bangalore Mercantile Bank	Bangalore	.....
37	South India Bank	Tinnevelly	.....
38	Bombay Merchants' Bank	Bombay	Bombay (branch).
39	Karachi Bank, Ltd.	Karachi	Bombay, Hyderabad (Sind), Larkhana.
40	Punjab National Bank	Lahore	Amritsar, Bombay, Calcutta, Cawnpore, Delhi, D. I. Khan, Ferozepore City, Gujranwala, Jammu, Jullundur City, Jhelum, Karachi, Kasur, Lahore City, Ludhiana, Lyallpur, Multan City, Patiala, Peshawar City, Quetta, Rawalpindi City, Sargodha, Sialkot City, Srinagar, Ambala City.
41	National Financing and Commission Corporation, Ld.	Bombay	Surat.

(3).—*Indian Joint Stock Banks*—concld.

No.	Banks.	Head Office.	Branches and Agencies.
42	Erode Bank	Erode	.....
43	Darbhanga Bank, Ltd.	Darbhanga	.....
44	Coimbatore Town Bank	Coimbatore	.....
45	Tinnevelly Bank	Tinnevelly	.....
46	Agra Bank, Ltd.	Agra	.....
47	Allahabad Trading and Banking Corporation, Ltd.	Allahabad	.....
48	Allahabad Union Bank	„	.....
49	Alliance Bank of Simla*	Simla	Abottabad, Agra, Ajmer, Ambala, Amritsar, Bombay, Calcutta, Cawnpore, Dalhousie, Darjeeling, Dehra Dun, Delhi City and Civil Lines, Ferozepore, Gwalior, Jullundur, Karachi, Lahore, Lahore-Charing Cross, Lahore Cantonment, Lucknow, Multan, Murree, Mussoorie, Nowshera, Peshawar Cantonment, Peshawar City, Quetta, Rawalpindi, Sialkot, Simla (Town Office), Srinagar (Kashmir), Ujjain (Gwalior State).
50	Bank of Behar, Ltd.	Bankipore	Chapra, Patna, Sassaram, and Gaya.
51	Bank of Berar, Ltd.	Amraoti, Berar	.....
52	Bangalore Cant. Rama Vilasa Bank, Ld.	Bangalore	.....
53	Chotanagpur Banking Association.	Hazaribagh	Giridih, Ranchi, Purulia, Daltonganj.
54	Faridpur Bank, Ltd.	Faridpur, Bengal	.....
55	Frontier Bank, Ltd.	Dehra Ismail Khan	Bannu, Tonk, Lahore.
56	Hazaribagh Bank, Ltd.	Hazaribagh	.....
57	Jullundur Bank, Ltd.	Jullunder City	.....
58	Madaripur Bank, Ld.	Faridpur	.....
59	Mahaluxmi Bank, Ltd.	Chittagong	.....
60	Muslim Bank of India, Ltd.	Lahore	.....
61	Rajshahi Lakshmi Bank, Ltd.	Rajshahi	.....
62	Rangpur Bank, Ltd.	Rangpur	.....
63	Union Bank, Ltd.	Kumbakonam	.....
64	Empire Bank, Ltd.	Bombay	.....
65	Bank of Baroda, Ltd.	Baroda	Ahmedabad, Mehsana, Navsari, Surat.
66	Upper India Insurance and Banking Co., Ltd.	Benares	.....
67	Bengal Credit Bank, Ltd.	Calcutta	.....
68	Rajshahye People's Bank, Ltd.	Rajshahi	.....

*With which is incorporated the Punjab Banking Co., Ltd., and the Delhi and London Bank, Ltd.

Appendix II.

Statement showing (a) Capital and Reserve, and (b) Deposits per 1,000 of population and per £1,000 of the total value of trade, in the Banks in India, as compared with those in the United Kingdom, based on the statistics of 1916.

	India.	United Kingdom.
	61 Banks (including 3 Presidency Banks, 10 Exchange Banks, and 48 Indian Joint Stock Banks).	65 Banks (including the Bank of England).
Capital and Reserve	£46,333,000	£131,828,000
Deposits	£75,784,000	£1,657,705,000
Total population (census of 1911) No.	315,084,000	45,222,000
Total value of trade*	£263,499,000	£1,633,011,000
Capital per 1,000 of population	£147·05	£2,915·13
Deposits per 1,000 of population	£240·52	£36,657·05
Capital per £1,000 of trade	£175·84	£80·73
Deposits per £1,000 of trade	£287·61	£1,015·12

*Excluding trade on Government account.

Appendix III.

Capital, Reserve, Deposits, and Cash Balances of the three Presidency Banks on 31st December each year.

	Capital	Reserve and Rest	Total	Deposits			Cash Balances
				Public	Private	Total	
	R(1,000)	R(1,000)	R(1,000)	R(1,000)	R(1,000)	R(1,000)	R(1,000)
1870	3,36,25	25,57	3,61,82	5,43,05	6,39,61	11,82,66	9,96,87
1880	3,50,00	55,27	4,05,27	2,91,15	8,49,28	11,40,43	7,41,45
1890	3,50,00	97,54	4,47,54	3,59,25	14,76,35	18,35,60	12,96,75
1900 . . .	3,60,00	1,99,61	5,59,61	2,80,53	12,88,27	15,68,80	5,04,49
1905	3,60,00	2,63,37	6,23,37	3,11,91	22,26,37	25,38,28	8,23,01
1906	3,60,00	2,79,89	6,39,89	3,07,85	27,45,08	30,52,93	10,95,07
1907	3,60,00	2,94,93	6,54,93	3,35,78	28,11,26	31,47,04	9,47,51
1908	3,60,00	3,09,22	6,69,22	3,25,79	28,61,53	31,87,32	10,38,72
1909	3,60,00	3,18,22	6,78,22	3,19,76	32,65,03	35,84,79	11,65,56
1910	3,60,00	3,31,03	6,91,03	4,23,63	32,34,38	36,58,01	11,35,12
1911	3,60,00	3,40,39	7,00,39	4,38,30	34,19,99	38,58,29	13,58,20
1912	3,75,00	3,63,61	7,38,61	4,27,01	35,84,47	40,11,48	11,77,38
1913	3,75,00	3,73,07	7,48,07	5,88,66	36,48,50	42,37,16	15,37,75
1914	3,75,00	3,89,17	7,64,17	5,61,52	40,04,08	45,65,60	20,83,92
1915	3,75,00	3,72,50	7,47,50	4,88,67	38,61,19	43,49,86	14,65,24
1916	3,75,00	3,60,99	7,35,99	5,20,58	44,70,87	49,91,45	17,27,25

Appendix IV.

Value of Gold and Treasure, Imported and Exported.

	Gold.			Treasure.		
	Imports.	Exports.	Net Imports.	Imports.	Exports.	Net Imports.
Quinquennial average—	£(1,000)	£(1,000)	£(1,000)	£(1,000)	£(1,000)	£(1,000)
1864-65 to 1868-69 . . .	6,038	314	5,724	17,278	1,760	15,518
1869-70 to 1873-74 . . .	3,107	179	2,928	7,718	1,433	6,285
1874-75 to 1878-79 . . .	1,482	888	594	8,608	2,433	6,175
1879-80 to 1883-84 . . .	3,477	83	3,394	9,594	1,094	8,500
1884-85 to 1888-89 . . .	2,537	239	2,298	10,052	1,207	8,845
1889-90 to 1893-94 . . .	2,936	1,374	1,562	11,967	2,411	9,556
1894-95 to 1898-99 . . .	3,404	1,894	1,510	9,128	3,871	5,257
1899-1900 to 1903-04 . .	8,666	4,544	4,122	17,341	7,767	9,574
In the year 1904-05 . . .	14,540	8,073	6,467	26,340	11,027	15,313
„ 1905-06 . . .	9,834	9,527	307	21,100	10,313	10,787
„ 1906-07 . . .	12,353	2,453	9,900	29,720	3,813	25,907
„ 1907-08 . . .	13,835	2,257	11,578	28,189	3,632	24,557
„ 1908-09 . . .	5,603	2,699	2,904	15,163	4,213	10,950
Quinquennial average— 1904-05 to 1908-09 . . .	11,233	5,002	6,231	24,102	6,599	17,503
In the year 1909-10 . . .	16,687	2,234	14,453	25,015	4,266	20,749
„ 1910-11 . . .	18,595	2,609	15,986	26,491	4,751	21,740
„ 1911-12 . . .	27,662	2,489	25,173	35,647	6,916	28,731
„ 1912-13 . . .	27,527	4,860	22,667	41,221	7,008	34,133
„ 1913-14 . . .	18,818	3,268	15,550	28,960	4,721	24,239
Quinquennial average— 1909-10 to 1913-14 . . .	21,858	3,092	18,766	31,467	5,548	25,919
In the year 1914-15 . . .	7,136	2,037	5,099	14,539	3,525	11,014
„ 1915-16 . . .	3,521	4,261	—740	7,964	5,484	2,480

Absorption of Gold (both Coin and Bullion) in India.

(In thousands of £ sterling)

	1873-74.	Average of 5 years ending.					1903-04.	1908-09.	1909-10.	1910-11.	1911-12.	1912-13.	1913-14.	Average of 5 years ending 1913-14.	1914-15.	1915-16.
		1878-79.	1883-84.	1888-89.	1893-94.	1898-99.										
	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000	£1,000
1. Production . .	...	...	...	...	463	1,226	1,967	2,267	2,207	2,200	2,240	2,273	2,293	2,243	2,340	2,367
2. Imports . . .	...	...	..	...	2,857	3,403	8,667	11,233	16,697	18,594	27,660	27,527	18,820	21,858	7,133	3,520
3. Exports . . .	...	...	...	...	1,310	1,894	4,547	5,000	2,234	2,607	2,487	4,860	3,267	3,091	2,040	4,260
4. Net imports (*i.e.*, 2—3)	1,285	594	3,394	2,297	1,547	1,509	4,120	6,233	14,453	15,987	25,173	22,667	15,553	18,767	5,093	—740
5. Net addition to stock (*i.e.*, 1+4) . .	1,285	594	3,394	2,297	2,010	2,735	6,087	8,500	16,660	18,187	27,413	24,940	17,846	21,010	7,433	1,627
6. Balance held in mints and Government Treasuries and Currency and Gold Standard Reserves .	...	...	...	...	...	439	8,587	4,380	6,427	6,487	15,827	19,960	15,000	12,740	10,386	8,428
7. Increase (+) or decrease (—) in stock held in mints, etc., as compared with the preceding year .	...	...	...	...	...	+405	+1,780	—2,167	+6,340	+60	+9,340	+4,133	—4,960	+2,983	—4,614	—1,958
8. Net absorption (*i.e.*, 5—7) . .	1,285	594	3,394	2,297	2,010	2,330	4,307	10,667	10,320	18,127	18,073	20,807	22,806	18,027	12,047	3,585
9. Progressive total of additions to stock .	1,285	3,963	12,504	25,766	34,853	37,650	67,460	105,873	140,227	158,414	185,827	210,767	228,613	184,770	236,046	237,673
10. Net progressive absorption . .	1,285	3,963	12,504	25,766	34,853	37,211	58,873	101,493	133,809	151,927	170,000	190,807	213,613	172,029	225,660	229,245

NOTE.—The figures in this table have been revised. The quinquennial average figures are inserted only for comparative purposes. The progressive total of additions to stock (item 9) and net progressive absorption (item 10) are calculated on the annual figures and are not based on these averages. Item 9 is the sum of the yearly figures in item 5 and item 10 the sum of the yearly figures in item 8.

Appendix V.

Capital, Reserve, Deposits and Cash Balances of the Exchange Banks on 31st December each year.

	Number of Banks.	Capital and Reserve.			Deposits.		Cash Balances at Head Offices and Branches.	
		Capital.	Reserve and Rest.	Total.	Out of India.	In India.	Out of India.	In India.
		£(1,000)	£(1,000)	£(1,000)	£(1,000)	₹(1,000)	£(1,000)	₹(1,000)
1870 . .	3	2,001	180	2,184	2,688	52,31	2,611	61,13
1880 . .	4	2,532	541	3,073	7,305	3,39,88	2,046	1,80,00
1890 . .	5	6,334	1,699	8,083	30,734	7,53,60	5,810	3,50,43
1900 . .	8	11,803	3,971	15,774	54,263	10,50,35	11,945	2,39,58
1905 . .	10	15,204	7,219	22,423	94,536	17,04,45	21,504	3,78,13
1906 . .	10	15,866	8,421	24,287	104,457	18,08,73	18,436	5,10,59
1907 . .	10	16,671	9,320	25,991	94,778	19,17,01	14,860	5,60,20
1908 . .	10	16,692	9,149	25,841	103,229	19,51,52	16,665	3,78,63
1909 . .	10	18,952	11,211	30,163	116,021	20,27,42	18,121	4,15,86
1910 . .	11	21,734	12,610	34,344	134,166	24,79,17	17,810	4,38,51
1911 . .	12	22,600	13,001	35,601	157,764	28,16,90	22,136	4,56,91
1912 . .	12	23,657	13,980	37,637	172,028	29,53,62	23,082	6,14,82
1913 . .	12	23,640	14,185	37,825	181,138	31,03,54	25,688	5,88,24
1914 . .	11(*a*)	22,815	14,157	36,972	164,970	30,14,76	40,694	8,39,37
1915 . .	11	22,681	14,112	36,793	179,948	33,54,56	45,111	7,60,13
1916 . .	10(*b*)	22,836	15,095	37,931	208,232	38,03,88	41,367	10,14,01

(*a*) Excluding the Deutsche-Asiatische Bank which went into liquidation after the outbreak of war.

(*b*) Excluding the Delhi and London Bank which has been amalgamated with the Alliance Bank of Simla, Ltd. (which is an Indian Joint Stock Bank).

Appendix VI.

Capital, Reserve, Deposits, and Cash Balances of the Indian Joint-Stock Banks, classified in groups according to the amount of capital, on 31st December 1916.

	No. of Banks.	Paid-up Capital.	Reserve and Rest.	Deposits.	Cash Balances.
		₹(1,000)	₹(1,000)	₹(1,000)	₹(1,000)
Banks with Capital and Reserve amounting to ₹20,00,000 and above	6	1,60,48	1,37,71	19,56,15	4,88,63
Banks with Capital and Reserve between ₹20,00,000 and ₹10,00,000 . . .	10	1,05,37	29,49	4,55,42	97,61
Banks with Capital and Reserve between ₹10,00,000 and ₹5,00,000 . . .	4	21,51	6,46	59,48	17,25
Total of Banks above ₹5,00,000 .	20	2,87,36	1,73,66	24,71,05	6,03,49
Banks with Capital and Reserve between ₹5,00,000 and ₹1,00,000 . . .	28	51,77	11,50	1,01,23	16,76
TOTAL .	48	3,39,13	1,85,16	25,72,28	6,20,25

Appendix VII.

	Year when founded.	Capital ₹ lakhs.	Reserve ₹ lakhs.	Deposits ₹ lakhs.	Cash Balances ₹ lakhs.
Allahabad Bank, Ltd. . . .	1865	30	53	547	169
Alliance Bank of Simla, Ltd. . .	1874	34	47	806	174
Bangalore Bank, Ltd. . . .	1860	4	1	4	2
Bank of Baroda, Ltd. . . .	1908	10	8	142	20
Bank of India, Ltd. . . .	1906	50	13	345	96
Bank of Mysore, Ltd. . . .	1913	10	2	51	13
Bank of Rangoon, Ltd. . . .	1906	16	5	22	4
Bank of Upper India, Ltd. . .	1862	14	9	125	24
Benares Bank, Ltd.	1904	10	4	46	4
Bengal National Bank, Ltd. . .	1907	8	6	7	1
Bombay Merchants Bank, Ltd. .	1909	15	...	3	1
Central Bank of India, Ltd. . .	1911	15	2	147	47
Indian Bank, Ltd.	1907	10	2	32	8
Kayestha Trading and Banking Corporation, Ltd.	1899	8	3	21	...
National Financing and Commission Corporation, Ltd.	1912	9	...	17	3
Oudh Commercial Bank, Ltd. . .	1881	5	3	12	4
Poona Bank, Ltd.	1898	9	3	2	1
Punjab National Bank, Ltd. . .	1894	16	11	111	22
Punjab and Sindh Bank, Ltd. . .	1908	3	2	27	8
Standard Bank, Ltd. . . .	1912	10	...	5	2

Appendix VIII.

Extracts relating to the People's Bank.

A considerable portion of the assets consists of debts due from individuals, partnerships and limited companies of whom many have suffered repeated losses and assets and the debts are not realisable to any appreciable extent, *e.g.*, (1) The Punjab Cotton Press Company, Limited, Lahore, ₹20,00,000, (2) The Lahore Spinning and Weaving Mills Company, Limited, ₹7,50,000, (3) The Pioneer Investment Company, Limited, Lahore, ₹8,50,000, (4) The Surat People's Spinning and Weaving Mills, ₹4,50,000, (5) Harkishen Lal and Sons, ₹78,000, (6) Harkishen Lal and Company, ₹1,54,130, (7) Lala Harkishen Lal, ₹4,48,842, (8) Debentures in the Lahore Spinning and Weaving Mills, Limited, ₹1,00,000. Total ₹48,30,972.

* * * * *

The applicant for compulsory winding up urged four points:—First, that the Directors have grossly mismanaged the affairs of the Bank lending to themselves or to companies in which they are directors or partners. Second, that the mismanagement has been such as to raise strong belief that the directors' action has not been *bonâ fide*. Third, that the directors have committed a criminal offence in paying the dividend of 30th December last out of capital. And fourth, that in certain cases companies' assets have been deliberately made away with. For the last point the audit shows a debt of nearly four lakhs due from the Ganges Flour Mills, whereas the balance sheet of that company filed by applicant shows no debt whatever due to the People's Bank. The case of the Cawnpore Flour Mills is similar. With regard to all these points I am not recording any definite finding one way or the other. It is possible that they may be satisfactorily explained. There is, however, a strong *primâ facie* case made out which would justify criminal proceedings if proved. Under the circumstances I think that the applicant is entitled to receive compulsory liquidation. I am the more confirmed in this view from the circumstances under which the proposed voluntary liquidators have been chosen. No explanation whatever was called for by any of the shareholders at any of the meetings as to the serious charges levelled against the managing directors by the company's own auditors, Basantram and Sons. At the same time the chairman chosen to preside at the last meeting was nominee of the managing director and all the proposed liquidators are nominees of another director who is himself indebted to the Bank. * * * * *

We think that sufficient indication has been given to disclose the extremely unbusiness-like manner in which the Directors of the Bank have dealt with the Funds entrusted to them by the Depositors. Apart from the particularly unsound practice of locking up the whole of these funds in investments which cannot be immediately realised at a time of urgent crisis, it is evident that the bulk of these investments are either totally unsecured or made on very doubtful security.

* * * * *

Of the total advances of ₹1,07,09,000-14-1, we find that no less a sum than ₹71,72,637-13-1 has been advanced to companies or other concerns in which certain of the Directors of the Bank have been interested either as individuals, Directors or as joint borrowers. A list of these advances with the names of the Directors concerned, is given in Appendix "E" subjoined to which will be found a summary of the amounts borrowed against each Director, individually or jointly with other Directors. As the foregoing classification amply shows, a considerable portion of these loans have been made without sufficient security or no security at all, and it is therefore, a matter of concern how far the Directors have advanced money to these borrowing concerns with the knowledge that recovery in full was doubtful. The Director principally concerned in this matter is Lala Harkishen Lal.

* * * * *

Extracts relating to the Indian Specie Bank.

* *. The Bank has also lost heavily in loans advanced to some jewellers and the *badla* business of Fazul and David shares. Directors of the Bank have gone on paying large dividends and bonuses though the bank has really been suffering considerable loss every year and they are therefore liable to make good to the bank the amount spent for dividends and bonuses. The accounts of the bank have been examined every day by two Directors of the bank and by Sir Vithaldass Thackersey, Sir Jogmohan Das Virgivandas and Lakhamsey Napoo, and they must have known that the bank was gradually sustaining heavy losses which they ought to have taken proper care to prevent. Various balance sheets of the company from 1908 up to date are entirely false and misleading, and conceal the true position of the bank. If the affairs of the bank are properly investigated managing directors and officers of the bank will be found to have acted negligently, if not fraudulently, and they will be found liable to make good to the bank all losses by reason of their mismanagement or negligence, the result of which will be that shareholders will not be required to contribute anything further in the final winding up and a substantial balance will be available to the

shareholders for distribution. Unless an order for compulsory winding up is made, it will be impossible for the bank to recoup losses caused to it by the conduct of its directors. The petitioners therefore prayed for a winding up order and the appointment of a provisional liquidator. * * * * * *. The joint report of Messrs. A. F. Ferguson and Company, and Mr. S. B. Billimoria, accountant, were read. The report, after dealing with the various transactions of the bank stated that, though assets exceeded liabilities on paper, one crore worth of assets were irrecoverable and some allowance would have to be made for anticipated losses in pearls and shares, leaving about a little more than half the total amount of liabilities for distribution among the creditors. Another important point was that if outstanding calls on shareholders were fully paid up the creditor's interests would be entirely saved, but it was believed that at most ₹50 lakhs would be paid in and the remaining one-third would have to be written-off.' * * *

Appendix IX.

Consolidated statement for the Credit of Commercial Banks of Germany—1888-1907.

[In thousands of Marks.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Close of the year.	Number of Banks.	Number of Agencies (branches). (1)	Subscribed Capital.	Paid in Capital.	Surplus.	Paid in Capital and Surplus.	Deposit and cheque accounts.	Credit Accounts.	Acceptances.	Total (Cols. 8, 9 and 10).	Cash and balance at the Reichsbank.	Securities and Syndicate participations.	Bills discounted.	Loans on collateral.	Debit accounts (overdrafts).	Permanent participations.	Ratio of capital and surplus to deposits, credit accounts and acceptances.	Dividends.	
																		Amount.	Per cent. of Capital.
																	Per cent.		
1888 .	164	173	866,542	846,724	125,183	971,907	401,605	881,952	470,153	1,753,710	155,525	338,391	574,485	357,235	1,277,680	32,405	55·4	63,539	7·5
1889 .	201	229	1,090,700	1,053,398	164,624	1,218,022	486,568	1,101,047	534,796	2,122,411	208,610	367,159	629,232	556,605	1,530,657	72,175	57·4	85,681	7·8
1890 .	223	253	1,141,616	1,102,072	193,355	1,295,377	565,844	890,692	524,498	1,981,034	208,543	360,094	733,072	441,236	1,474,813	55,416	65·4	85,729	7·7
1891 .	256	283	1,142,179	1,110,389	203,973	1,314,362	557,352	1,029,011	512,984	2,099,347	215,404	363,472	850,782	338,635	1,536,497	49,370	63·1	67,817	6·1
1892 .	261	295	1,142,285	1,114,028	212,813	1,326,841	551,293	956,075	507,397	2,014,765	203,302	330,586	996,219	383,764	1,623,595	54,950	65·9	65,760	5·9
1893 .	263	297	1,133,366	1,105,444	209,966	1,315,510	550,349	1,006,278	536,929	2,093,556	222,241	351,865	770,330	365,589	1,652,614	67,790	62·8	63,129	5·5
1894 .	260	287	1,148,854	1,130,028	214,513	1,344,541	666,414	1,422,394	622,808	2,711,616	242,799	395,093	860,372	501,207	1,682,341	62,010	49·6	72,245	6·4
1895 .	309	356	1,239,533	1,203,540	225,129	1,428,669	668,024	1,380,068	719,993	2,768,085	250,709	462,574	849,440	495,250	2,182,171	51,326	51·6	87,462	7·3
1896 .	373	505	1,519,370	1,296,372	264,825	1,661,097	821,426	1,414,776	795,384	3,031,586	229,047	508,612	894,659	556,900	2,356,865	111,116	54·7	101,626	7·8
1897 .	393	599	1,845,885	1,706,008	324,985	2,030,993	868,111	1,853,311	912,690	3,636,112	426,326	686,615	1,135,011	683,377	2,379,467	161,781	55·8	126,526	7·4
1898 .	398	630	2,145,451	1,893,311	360,188	2,332,076	1,115,374	1,993,098	1,089,388	4,197,860	342,324	727,964	1,290,234	1,037,811	3,044,225	183,448	55·5	141,073	7·5
1899 .	409	658	2,340,161	2,176,062	409,738	2,585,800	1,396,403	2,187,918	1,252,399	4,836,720	338,410	826,934	1,563,864	950,896	3,688,631	208,851	53·4	157,538	7·2
1900 .	423	701	2,397,393	2,293,668	436,626	2,729,874	1,485,819	2,194,248	1,352,259	5,032,326	419,229	824,420	1,798,713	832,794	3,817,403	270,720	45·6	167,260	7·3
1901 .	436	736	2,360,282	2,270,327	421,978	2,692,305	1,511,457	3,282,053	1,234,235	6,027,745	447,667	911,115	1,716,157	895,582	3,482,724	222,985	44·6	127,930	5·7
1902 .	435	752	2,390,067	2,306,673	439,658	2,746,331	1,587,597	2,714,275	1,270,281	5,572,153	422,776	875,489	1,731,593	1,050,757	3,961,533	262,991	49·3	135,014	5·8
1903 .	421	751	2,344,881	2,268,620	453,836	2,725,001	1,640,897	3,023,730	1,379,557	6,044,184	388,452	956,497	1,819,045	1,112,515	4,171,087	236,124	45·1	144,807	6·2
1904 .	427	802	2,531,399	2,365,346	507,794	2,873,140	1,897,050	3,300,634	1,320,043	6,517,727	437,812	959,647	2,031,529	1,007,513	4,566,648	288,005	44·1	158,159	6·7
1905 .	420	839	2,707,656	2,557,892	530,618	3,088,510	1,979,601	4,265,551	1,519,742	7,764,894	491,411	1,198,778	2,253,931	1,351,538	5,473,841	285,854	39·9	182,758	7·1
1906 .	432	1,079	2,956,416	2,755,403	605,515	3,360,918	2,421,970	4,855,338	1,845,507	9,122,815	528,075	1,221,034	2,725,095	1,571,622	6,049,385	381,194	36·8	201,285	7·3
1907 .	421	1,084	3,019,537	2,873,295	643,936	3,517,231	2,697,314	4,816,786	2,262,889	9,776,989	553,675	1,289,563	2,895,304	1,338,714	6,373,224	439,365	34·5	207,812	7·3

NOTE.—(1) The number of branches excludes (a) deposit branches, (b) exchange offices, and (c) the so-called agencies.
This statement includes only joint stock banks but not private banking firms, the number of which in spite of continuous absorption by the joint stock banks is still considerable (about 60,000).

Appendix X.

Analytical statement of the number of Banks and Companies on the Directorates of which the German Great Commercial Banks are represented.

Companies or Directorates.	Names of Banks.								Total.
	Bank für Handel und Industrie.	Berliner Handels-Gesellschaft.	Commerz-und-Disconto Bank.	Deutsche Bank.	Direction der Disconto-Gesellschaft.	Dresdner Bank.	National Bank für Deutschland.	A Schaaffhausen'scher Bankverein.	
Mining, Smelting and Salt Works	9	18	1	13	13	10	13	18	95
Glass, Pottery, etc.	4	1	2	1	2	2	4	2	18
Metal working	2	8	2	3	2	3	3	4	27
Machine constructors and instrument making.	15	10	7	24	8	14	18	15	111
Chemicals	3	4	1	1	5	1	2	2	19
Illuminants, Soaps, Oils, Varnishes	2	1	...	4	2	...	3	1	13
Textiles and Leather	5	...	1	6	...	2	1	4	19
Paper	2	...	...	1	...	1	...	...	4
Gum, etc.	...	...	...	1	...	...	...	...	1
Timber	1	...	...	...	...	...	...	...	1
Sugar and Foodstuffs	7	3	3	3	1	2	7	1	27
Railway construction	...	1	1	2	...	...	2	3	9
Art Industries	...	...	...	2	...	...	4	1	7
Commercial enterprises and Banks	24	16	7	28	29	29	21	20	174
Insurance Companies	3	...	2	8	2	3	1	1	20
Transport Companies	9	9	3	6	4	11	9	16	67
Miscellaneous Foreign Companies	6	17	1	13	21	8	6	6	78
Hotels	...	...	1	...	...	1	...	...	2
Plantations	...	...	...	...	2	...	2	...	4
Exhibitions	...	...	...	...	1	...	...	...	1
Total	92	88	32	116	92	87	96	94	697

Appendix XI.

BANK FÜR HANDEL UND INDUSTRIE.

Balance Sheet as per 31st December, 1912.

ASSETS—		M.	pf.
Cash, foreign money, and coupons	.....	21,989,776	13
Credit balances with clearing banks	.....	24,652,252	54
Bills of Exchange and Treasury bills—			
(*a*) Bills of Exchange (exclusive of *b*, *c* and *d*) and Treasury bills of the Empire and the Federal States	M 120,038,507—89		
(*b*) Own acceptances	770,866—85		
(*c*) Own drafts	116,471—18		
(*d*) Clients' Promissory Notes to the order of the Bank	20,530—52		
		120,946,376	44
Credit balances with other banks and bankers	.....	56,834,849	52
Contango loans and loans granted against stocks and shares	.....	124,729,505	82
Loans granted against goods and goods in transit of which were secured on 31st December 1912.	.....	8,981,972	10
(*a*) by goods, Bills of Lading, and Warehouse warrants	2,476,741—59		
(*b*) by other securities	2,991,000—60		
Own stocks and shares—			
(*a*) Loans and Exchange Bonds of the Empire and the Federal States	17,017,028—30		
(*b*) Other stocks and shares which can be pledged with the Reichsbank	5,235,223—15		
(*c*) Other stocks and shares which are quoted on the Stock Exchange	17,978,728—23		
(*d*) Other stocks and shares	7,015,661—78		
		47,246,641	46
Syndicate Participations	.....	45,440,304	87
Permanent Participations in other Banks and banking firms	.....	19,064,209	95
Debtors in current account—			
(*a*) secured	337,854,890—96		
(*b*) unsecured	71,163,512—73		
		409,018,403	69
(*c*) debtors under the Bank's guarantee	37,577,594—66		
Bank Premises	.....	15,461,904	98
Other immoveable property	.....	163,385	63
		894,529,783	13

LIABILITIES.		M.	pf.
Share Capital	.....	160,000,000	
Reserve Fund	.....	32,000,000	
Creditors—			
	M.		
(*a*) Debit balances with other Banks	174,021—60		
(*b*) Payments made by other Banks to the Bank's clients under Letter of Credit issued by the Bank	2,623,418—98		
(*c*) Deposits of German Banks and Banking firms	32,194,596—78		
(*d*) Deposits free of commission—			
(1) due within 7 days	53,713,188—51		
(2) due later than after 7 but within 90 days (3 months)	68,722,512—56		
(3) due after more than 3 months	39,499,309—39		

	M.	Liabilities M. pf.
(*c*) Other Creditors—		
(1) due within 7 days	171,808,132—95	
(2) due later than after 7 days but within 3 months	154,557,574—93	
(3) due after more than 3 months	24,293,749—80	
		547,591,505—50
Acceptances and cheques—		
(*a*) Acceptances	138,478,485—82	
(*b*) Cheques not yet presented for payment	1,999,891—38	
		140,478,377—20
(*c*) Liabilities under the Bank's guarantee	37,577,594—66	
Other Liabilities—		
Unclaimed dividends	22,432—98	
Reserve for duty on Renewal of Coupons sheets	1,600,000	
Suspense account	1,682,167—42	
		3,304,600—40
Profit and Loss account	.....	11,155,300—03
		894,529,783—13

The Balance Sheet shows the total liabilities (exclusive of share capital and reserve fund) to be 702 *Million Marks.*

The liquid assets of the Bank, *i.e.*, those assets which can be realized at very short notice, are the following:—

(1) Cash, foreign money and coupons	M. 22 Millions
(2) Credit Balances with clearing Banks	„ 24 „
(3) Bills of Exchange which can be re-discounted with the Reichsbank and which are therefore considered liquid assets	„ 120 „
(4) Credit Balances with other Banks and Bankers (nostro accounts)	„ 57 „
(5) Contango loans (Report Credit) about	„ 31 „
Liquid Assets	M. 254 Millions

The Bank has granted credits in the following manner:—

(1) By Discounting Bills of Exchange . . . . . M. 120 Millions

(2) By granting loans against stocks and shares (partly for the purpose of carrying over transactions—Contango or Report business). These loans are to a large extent granted to speculators and investors, rarely to commercial and industrial firms . . . . . „ 125 „

(3) By granting loans on goods stored under the Bank's lock and key or in transit (often taken to hold over goods till a more favourable time arrives) . . „ 9 „

(4) By allowing overdrafts in current account (*a*) secured . . . . . „ 338 „

In this case the security generally consists in a general hypothecation of the firm's stock of goods which however, remain in the hands of the firms. If the loan is granted to an industrial firm, the security consists in a general hypothecation of the firm's stock of raw goods, manufactured goods, goods in process of manufacture, buildings and plant.

The security can also consist in stocks and shares (which is rarely the case), or in sureties given by personal guarantors.

(4) (*b*) unsecured (Blanko-Credit) . . . . . M. 71 Millions

An unsecured credit in current account is often granted temporarily, *e.g.*, for the season (to a hotel-keeper in a watering place) or for the purpose of enabling an industrial firm to accept and execute a large order which otherwise they would have to refuse for want of funds.

Re (4) (*b*).—The Bank reserves to itself the right of inspecting the firm's books at all times.

Re (4) (*a*) and (*b*).—The Bank generally insists on the firm doing all its business with the one Bank only; in the case of the firm being a limited Company one of the managers of the Bank is on the Board of Directors of the Company and is thus in a position to exercise a large amount of control over the firm's business.

(5) By participating in the floating of limited Companies or in the transformation of private firms into limited Companies.* As a rule several Banks or banking firms form a syndicate for this purpose. They take over the shares of the new company (or part of them) and keep them until such time as the shares may be introduced (eingefuhrt) on the Stock Exchange, which, according to the law, generally takes place after the first annual balance sheet of the new company has been published.

The credits enumerated above are given out of the Bank's funds (Capital and Deposits) with the exception of 138 Million Marks. For this amount the Bank has accepted bills of exchange (due after three months) drawn on the Bank by its clients. The clients discount the Bank's acceptance with other Banks and thus obtain money on the Bank's name, as it were, when the bill falls (due after three months) the client (who drew the bill) is expected to supply the Bank with funds to meet its acceptance. He often obtains such funds by drawing again on the Bank and negotiating their acceptance as above.

In this case, too, the Bank is covered by a general hypothecation as stated under (4) (*a*).

Out of the above mentioned 138 Million Marks, about 6 or 7 Million Marks probably refer to No. (3) and the remaining 130 Millions to No. 4 *a* and *b* (mostly 4 *a*).

* M. 45 Millions.

Appendix XII.

Capitals, Deposits and Loans of the Industrial Bank of Japan.

Year.	Authorised Capital.	Paid-up Capital.	Reserve Fund.	Deposits.	Advances.			Capital Fund in Trust.	Profit and Loss Account.					Debenture.	Year.
					Loans.	Bills discounted.	Total.		Earnings.	Expenses.	Net Profit.	Dividend.	Rate of Dividend.		
	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Yen.	Per cent.	Yen.	
1905	10,000,000	5,000,000	294,100	1,436,462	2,475,700	2,012,519	4,488,219	6,667	1,391,779	1,134,534	257,245	186,100	7·0	9,756,000	1908
1906	17,500,000	13,750,000	409,100	20,312,458	12,373,830	3,300,073	15,673,903	1,549	3,394,657	2,238,533	1,156,124	881,950	7·3	9,595,000	1906
1907	17,500,000	16,250,000	623,200	14,884,911	13,617,338	4,688,678	18,306,016	71,579	3,690,431	2,130,173	1,560,258	1,164,700	7·5	14,055,000	1907
1908	17,500,000	16,250,000	993,000	10,072,668	24,951,098	2,000,092	26,951,190	603,176	3,446,982	1,779,890	1,667,092	1,300,000	8·0	13,925,000	1908
1909	17,500,000	16,250,000	1,364,600	8,665,624	26,620,857	4,340,582	30,961,439	1,526,295	4,237,117	2,572,336	1,664,781	1,300,000	8·0	33,241,000	1909
1910	17,500,000	16,250,000	1,669,000	8,875,381	26,233,075	3,567,434	29,800,509	1,579,053	4,293,285	2,636,717	1,656,568	1,300,000	8·0	36,718,000	1910
1911	17,500,000	17,500,000	1,969,000	4,780,800	23,630,528	16,122,558	39,753,086	3,834,857	4,703,910	2,997,880	1,706,030	1,383,014	8·0	45,161,650	1911
1912	17,500,000	17,500,000	2,269,000	3,602,358	23,513,728	16,357,849	39,871,577	6,694,870	5,067,469	3,308,470	1,758,999	1,400,000	8·0	55,517,150	1912
1913	17,500,000	17,500,000	1,640,944	15,884,020	27,716,839	27,842,672	55,559,511	5,447,251	5,257,755	4,947,831	309,924	962,500	5·5	52,157,100	1913
1914	17,500,000	17,500,000	1,776,300	16,575,556	30,132,488	30,716,387	60,848,875	10,897,503	5,540,237	4,208,362	1,331,875	1,187,500	6·5	56,689,400	1914

Appendix XIII.

LAW OF THE NIPPON KOGYO GINKO

(THE INDUSTRIAL BANK OF JAPAN, LTD.)

Promulgated by Law No. 70 on the 22nd day of March, the 33rd year of Meiji (1900).

CHAPTER I.

GENERAL STATEMENT.

Article 1. The Nippon Kogyo Ginko shall be constituted a joint stock company and have its chief office in Tokyo.

Article 2. The capital of the Nippon Kogyo Ginko shall be seventeen million five hundred thousand *yen*; which amount may be increased with the sanction of the Government. (Amended by Law No. 2, February, 1906.)

Article 3. The amount of each share of the Nippon Kogyo Ginko shall be fifty *yen*. (Amended by Law No. 2, February, 1906.)

Article 4. The term of business of the Nippon Kogyo Ginko shall be fifty years; which term may be extended with the sanction of the Government.

CHAPTER II.

CHIEF OFFICERS.

Article 5. There shall be one President, one Vice-President, three or more Directors, and three or more Auditors in the Nippon Kogyo Ginko. (Amended by Law No. 2, February, 1906, and Law No. 8, March, 1914.)

Article 6. The President shall represent the Nippon Kogyo Ginko, and superintend its business. (Amended by Law No. 2, February, 1906.)

In the event of the office of President becoming vacant, the Vice-President shall discharge the duties of President. (Amended by Law No. 2, February, 1906.)

The Vice-President and Directors shall assist the President and shall transact any special business as provided in the By-Law. (Amended by Law No. 2, February, 1906.)

The Auditors shall inspect the business of the Nippon Kogyo Ginko.

Article 7. The President and Vice-President shall be appointed by the Government from among shareholders owning at least two hundred shares; and the term of office of a President and a Vice-President shall be five years. (Amended by Law No. 2, February, 1906.)

The Directors shall be appointed by the Government from among candidates elected at a General Meeting of Shareholders, the qualification of such candidates to be ownership of at least one hundred shares each, and the number of candidates to be twice that of the Directors to be appointed. The term of office of a Director shall be three years. (Amended by Law No. 2, February, 1906.)

The Auditors shall be appointed by election at a General Meeting of Shareholders from among shareholders owning at least sixty shares each; and the term of office of an Auditor shall be two years. (Amended by Law No. 2, February, 1906.)

Article 8. The President, Vice-President and Directors may not engage, under any circumstance whatsoever, in any other profession or business. An exception may be made, however, by special permission of the Minister of State for Finance. (Amended by Law No. 49, March, 1905, and Law No. 2, February, 1906.)

CHAPTER III.

BUSINESS.

Article 9. The Business of the Nippon Kogyo Ginko shall be as follows:—

1. To make loans on the security of national loan-bonds, prefectural and municipal loan-bonds, or debentures and shares of companies.
2. To subscribe for, or take over by transfer, national loan-bonds, prefectural and municipal loan-bonds, or debentures of companies.
3. To receive deposits of money and undertake the custody of goods entrusted to it for safe keeping.

4. To undertake trust business. (Amended by Law No. 49, March, 1905.)

5. To discount bills. (Added by Law No. 49, March, 1905.)

6. To buy and sell bills of exchange and documentary bills of exchange. (Added by Law No. 8, March, 1914.)

7. To make loans on the security of estates (zaidan) created by virtue of special laws. (Added by Law No. 49, March 1905.)

Article 9-2. The Nippon Kogyo Ginko may make loans on the security of land and buildings belonging to factories as well as on the security of land and buildings in cities and in towns assigned by Imperial Ordinance, provided the total sum of these loans shall in no case exceed half the amount of its paid-up capital. (Added by Law No. 28, March, 1911.)

Article 10. The Nippon Kogyo Ginko may devote its unemployed funds to the purchase of national loan-bonds, prefectural or municipal loan-bonds, or the debentures and shares of companies, or gold and silver bullions. (Amended by Law No. 28, March, 1911.)

Article 11. The Nippon Kogyo Ginko may not engage in any line of business not mentioned in this Law. This restriction shall not apply, however, when, with the permission of the Minister of State for Finance, the Bank engages in banking and other operations ancillary thereto, which are conducted in foreign countries. (Amended by Law No. 49, March, 1905.)

CHAPTER IV.

Debentures.

Article 12. The Nippon Kogyo Ginko may issue debentures, provided that their maximum limit shall not exceed ten times the amount of the Bank's paid up capital; nor shall such debentures exceed the aggregate of the moneys the Bank has actually loaned out, of the bills actually discounted and in hand at time, as well as of the national loan-bonds, the prefectural or municipal loan-bonds, and the debentures and shares of companies and gold and silver bullions in its possession. (Amended by Law No. 49, March, 1905, and Law No. 28, March, 1911.)

Article 12-2. In the event of supplying capital for undertakings of public utility abroad, the Bank may issue debentures with the permission of the Minister of State for Finance without observing the Provisions of Articles 12 and 15 of this Law and Article 200 of the Commercial Code. (Added by Law No. 49, March, 1905.)

The above-mentioned undertakings of public utility shall be determined by Imperial Ordinance. (Added by Law No. 49, March, 1905.)

Article 13. The debentures issued shall be of the face value of fifty *yen* or more, and unregistered: they may, however, be changed into registered debentures at the request of subscribers or owners.

Article 14. When the Nippon Kogyo Ginko desires to issue debentures, it must obtain the permission of the Minister of State for Finance. (Amended by Law No. 49, March, 1905.)

Article 14-2. When the Bank issues debentures, Article 199 of the Commercial Code is not applicable. (Added by Law No. 49, March, 1905.)

Article 15. The interest on the debentures of the Nippon Kogyo Ginko shall be paid twice in a year or oftener, and the principal shall be redeemed by lot within the space of thirty years reckoned from the date of issue.

Article 16. In case the Nippon Kogyo Ginko desires to issue debentures at a lower rate of interest, in order to replace those already issued the Bank need not be bound by the limitations of Article 12.

When new debentures at a lower rate of interest are issued as here indicated, the Bank, within the space of three months after their issue, shall redeem by lot old debentures equal in face value to the amount of the new debentures.

CHAPTER V.

The Reserve Fund.

Article 17. The Nippon Kogyo Ginko shall put aside, at the end of each business year, eight per cent or more of its net profit as a reserve for making up any deficit in its capital and two per cent or more of the said net profit of maintaining an even rate of dividends.

CHAPTER VI.

Government Control and Subsidy.

Article 18. The Government shall have control over the business of the Nippon Kogyo Ginko.

Article 19. The Nippon Kogyo Ginko, when it proposes to make alterations in its By-Laws, shall obtain the permission of the Minister of State for Finance.

Article 20. The Nippon Kogyo Ginko, when it proposes to establish branch offices or agencies, or to open correspondence with other banks, shall obtain the permission of the Minister of State for Finance. (Amended by Law No. 8, March, 1914.)

Article 21. The Nippon Kogyo Ginko, when it proposes to declare a dividend, shall obtain the permission of the Minister of State for Finance.

Article 22. The Minister of State for Finance may suspend any act of the Nippon Kogyo Ginko in the course of its business management, should such act be regarded by him as either contrary to Laws, Ordinances, or By-Laws, or injurious to the public interest.

Article 23. The Nippon Kogyo Ginko in accordance with orders from the Minister of State for Finance, shall present reports showing the condition of its business together with its financial accounts.

Article 24. The Minister of State for Finance shall specially appoint Comptrollers to supervise the business management of the Nippon Kogyo Ginko.

Article 25. The Comptrollers of the Nippon Kogyo Ginko may examine at any time the vault for cash, the vault for instruments of credit, the books and all kinds of documents of the Nippon Kogyo Ginko.

The Comptrollers of the Nippon Kogyo Ginko may attend the General Meeting of Shareholders or any other meetings of the Bank, and may express their views at the same.

Article 26. If the dividend to be declared for any business year of the Nippon Kogyo Ginko does not amount to five per cent. per annum of the paid-up capital, the Government shall give a subsidy sufficient to make up the deficiency, provided that the period of the Government's liability under this Article shall be limited to five years reckoned from the last day of the first business year of the Bank; and provided further that the amount of said subsidy shall in no case exceed five per cent. of the paid-up capital.

CHAPTER VII.

Punitive Regulations.

Article 27. Should there occur a breach of Law or regulation, as enumerated below, in the business management of the Nippon Kogyo Ginko, the President, Vice-President and Directors shall be required to pay a fine of not less than one hundred *yen* and not more than one thousand *yen*: provided that if any of the abovementioned officers has not been a party to in the violation, such officer shall be exempted. (Amended by Law No. 2, February, 1906.)

1. If the Bank has not secured the permission of the Minister of State for Finance in a case respecting which it is provided in the Law that such permission should be secured.
2. If the Bank has made loans contrary to the provisions of Article 9-2. (Added by Law No. 28, March, 1911.)
3. If the Bank has undertaken any business not mentioned in this Law, contrary to the provisions of Article 11.
4. If the Bank has issued debentures contrary to the provisions of Article 12 and Article 16.

Article 28. If the President, Vice-President and Directors of the Nippon Kogyo Ginko act in contravention of the provisions of Article 8, they shall be individually required to pay a fine of not less than twenty *yen* and not more than two hundred *yen*. (Amended by Law No. 2, February, 1906.)

APPENDIX.

Article 29. The Government shall appoint a Commission for the transaction of all business connected with the establishment of the Nippon Kogyo Ginko.

Article 30. The Commission for the Establishment of the Nippon Kogyo Ginko shall make a draft of the By-Laws, shall secure the sanction of the Government for the same, and shall then invite subscriptions.

Article 31. When the said Commission has secured a sufficient number of subscribers, it shall present to the Government the subscription certificates and solicit sanction for the establishment of the Bank.

When the said sanction has been secured, the Commission shall without delay call for the payment of the first instalment of capital by the subscribers.

Article 32. At the conclusion of the General Meeting of Shareholders of the Establishments of the Bank, the Commission for the Establishment of the Nippon Kogyo Ginko shall hand over its business to the President of the Bank.

This Law shall become effective from the day of promulgation.*

* This and the following paragraphs were added by Law No. 2, February, 1906.

The Nippon Kogyo Ginko shall take the following steps within three months from the day on which this Law becomes effective.

1. Shares which are one hundred thousand in number at the time when the Law becomes effective, shall be altered to two hundred thousand shares, one half being fully paid up and the other half being not fully paid up. The latter half shall be allotted in proportion to the number of the shares owned by shareholders at the time when the law becomes effective.
2. A call of not less than one quarter of the amount shall be made without delay for the aforesaid not fully paid-up shares. In this case, the provisions of the Commercial Code relating to the increase of the capital of a Joint Stock Company shall be applied.
3. There shall be an increase of one hundred and fifty thousand shares, and a call for their full payment shall be made without delay. In this case, paragraph 2 of Article 217 and paragraph 1 of Article 218 of the Commercial Code need not be observed.
4. Necessary registrations in connection with the aforesaid three clauses shall be made within two weeks from the day of the closure of the Shareholders' General Meeting held in connection with the second and third clauses in accordance with Article 213 of the Commercial Code. In this case, the document which certifies the taking over of shares, may be used in place of the documents provided in Clauses 1 and 2 of Article 189 of the Law of Procedure in Non-contentious Matters.

BY-LAWS OF THE NIPPON KOGYO GINKO

(THE INDUSTRIAL BANK OF JAPAN, LTD.)

Sanctioned by the Minister of State for Finance on the 2nd October of the 33rd year of Meiji

CHAPTER I.

GENERAL STATEMENT.

Article 1. The Bank shall be established in accordance with the provisions of the Law relating to the Nippon Kogyo Ginko, namely, Law No. LXX of the 33rd year of Meiji (1900) and shall be called the Kabushiki Kaisa Nippon Kogyo Ginko (The Industrial Bank of Japan, Limited).

Article 2. The Bank shall have for its object the transaction of business in accordance with the Law relating to the Nippon Kogyo Ginko and other Laws or Ordinances. (Amended, May, 1905.)

Article 3. The Bank shall have its head office in Tokio, and its branch offices in Tokyo and Osaka. (Amended, August, 1913.)

The Bank, with the sanction of the Government, may establish branches and agencies or open correspondence with other banks in any convenient places at home and abroad. (Amended, February, 1903, and June, 1914.)

Article 4. The term of the Bank's business shall be fifty years, reckoned from the day when the Government's sanction for its establishment is given: the term may, however, be extended by resolution of a Shareholders' General Meeting and with the sanction of the Government.

Article 5. All expenses connected with the first establishment of the Bank shall be borne by the Bank.

Article 6. All notifications of the Bank shall be made public through the columns of the Official Gazette and such newspapers as are regular channels for the notifications of the courts of justice. As to notifications abroad local usage shall be observed. (Amended, February, 1906.)

CHAPTER II.

CAPITAL AND SHARES.

Article 7. The capital of the Bank shall be seventeen million five hundred thousand *yen*, which shall be divided into three hundred and fifty thousand shares, each share being fifty *yen*. (Amended, February, 1906.)

The share bonds of the Bank shall be of six denominations; namely, 50 *yen*, 250 *yen*, 500 *yen*, 1,000 *yen*, 2,500 *yen*, and 5,000 *yen*. (Amended, February, 1906.)

The capital of the Bank may be increased by resolution of a Shareholders' General Meeting and with the sanction of the Government.

Article 8. So soon as shareholders have paid in the first instalment, the share shall be delivered to them, and the amount of each instalment when paid shall be entered on the shares on every occasion of such payment.

Article 9. With regard to subsequent instalments after the second, the President shall fix the date, the method and the amount of payment in accordance with the condition of business; and notice of payment shall be given to shareholders at least one month before such date. (Amended, February, 1906.)

Article 10. All cases of negligence in the payment of instalments shall be dealt with in accordance with the provisions of the Commercial Code.

The Bank shall, in all such cases of negligence, require the payment of a fine at the rate of four *sen* per one hundred *yen* per day, during a period reckoned from the day after the appointed date of payment of the instalment until its actual payment.

Article 10-2. To unregistered share-bonds shall be attached a talon and dividend coupons for fifty business years. (Added, February, 1906.)

In case the abovementioned dividend-coupons are all used up, the share-bonds shall be presented to the Bank and new dividend-coupons with a talon attached shall be exchanged for the old talon. (Added, February, 1906.)

Article 11. When shares of the Bank are to be transferred, a statement of the transfer together with the registered shares to be transferred shall be presented at the Bank. (Amended, February, 1906.)

In the abovementioned case, the Bank shall require both the parties concerned to sign their names on the back of the shares; and after the fact of the transfer has been duly entered in the Subscription Book, the shares shall be delivered to their new owner. (Amended, February, 1906.)

Persons who, coming into possession of shares of the Bank by succession or bequest, apply to have their names registered instead of those of the former owners, shall present proper certificates.

Article 12. Should any registered share of the Bank be lost, destroyed or stolen, its owner may apply to the Bank for delivery of a new share, and must accompany his application by a statement given in detail the face value and number of the old share.

On receipt of such application, the Bank shall publicly notify during a period of one month and at the expense of the applicant, the fact that the said share has been lost, destroyed or stolen, and shall then deliver the new share to the applicant, who shall be required to produce two persons satisfactory to the Bank as guarantors.

If during the abovementioned one month the applicant recovers the shares in question, he shall immediately report the fact to the Bank, which shall publicly notify it at the expense of the applicant.

Article 13. Should any objection be raised to the delivery of a new registered share in place of one lost, destroyed or stolen, the Bank shall not deliver the new share until after the matter has been adjudicated by a court of justice. (Amended, February, 1906.)

Article 14. Should one of the registered shares become defaced or mutilated, its owner may apply to the Bank for a new share, and must accompany his application by a statement of the particulars of the case as well as by the old share. (Amended, February, 1906.)

The Bank, on the receipt of the said share, shall have its authenticity tested, when, if the latter be found satisfactory, a new share shall be given in exchange. Should, however, the authenticity of the said share be found doubtful, the procedure indicated in the rules governing the case of a lost share shall be pursued.

Article 15. The Bank, at the request of a shareholder, shall exchange registered shares of one denomination for those of another denomination, a fee of 20 *sen* being charged for each new share thus delivered. (Amended, February, 1906.)

Article 16. The Bank shall levy a fee of five *sen* per share for registering on a registered share a new owner's name in place of that of the former owner, and a fee of twenty *sen* per share when new shares are delivered in lieu of shares destroyed, lost or stolen, as also in lieu of shares defaced or mutilated. (Amended, February 1906.)

Article 17. The Bank, during a period of one month immediately preceding each Ordinary General Meeting of Shareholders, shall suspend the registration of registered shares, such suspension being publicly notified in advance. (Amended, February, 1906.)

Article 17-2. Provisions relating to the disposal of unregistered shares shall be determined by Chief Officers' Council. (Added, February, 1906.)

CHAPTER III.

Chief Officers.

Article 18. There shall be one President, one Vice-President, three Directors and three Auditors in the Bank. (Amended, February, 1906, and June, 1914.)

Article 19. The President and Vice-President shall be appointed by the Government for a term of five years from among the shareholders owning at least two hundred shares of the Bank. (Amended, February, 1906.)

The Directors shall be appointed by the Government, for a term of three years, from among candidates elected at a General Meeting of Shareholders, the qualifications of such candidates to be ownership of at least one hundred shares each and the number of candidates to be twice that of the Directors to be appointed. (Amended, February, 1906.)

The Auditors shall be elected by a General Meeting of Shareholders for a term of two years from among shareholders owning at least sixty shares each. (Amended, February, 1906.)

Any vacancy among the Directors or Auditors shall be filled by election at a General Meeting of Shareholders.

Article 20. The President, Vice-President and Directors, during their respective terms of office, shall be required to deposit with the Auditors shares of Bank owned by them,—two hundred shares in the case of the President, and Vice-President, respectively, and one hundred shares in the case of each Director. (Amended, February, 1906.)

The shares thus deposited shall not be returned to their owners, even on the latter's retirement from office until all the documents mentioned in Article 190 of the Commercial Code shall have been presented to a General Meeting of Shareholders and shall have been accepted by such Meeting.

Article 21. The duties and privileges of the President are as follows:—

1. To represent the Bank in all its business matters.
2. To sign his name on all shares, debentures and other documents having reference to the rights and duties of the Bank.
3. To carry on the entire business of the Bank in accordance with the provisions of Laws, Ordinances and By-Laws, as well as the resolutions of the General Meeting of Shareholders and of the Chief Officers' Council.
4. To preside at the General Meeting of Shareholders and the Chief Officers' Council.

Article 22. The Vice-President and Directors shall assist the President and transact special business entrusted to them by the President. (Amended, February, 1906.)

Article 23. The Auditors shall inspect the business of the Bank.

Article 24. The remuneration of the President, Vice-President, Directors and Auditors shall be fixed at a General Meeting of Shareholders. (Amended, February, 1906.)

CHAPTER IV.

Chief Officers' Council.

Article 25. The Chief Officers' Council shall decide questions relating to the rules for the business procedure of the Bank and other important business matters.

The President, Vice-President and Directors shall together constitute the Chief Officers' Council. (Amended, February, 1906.)

Article 26. The Chief Officers' Council shall be convened by the President whenever he considers it necessary.

The Chief Officers' Council may not be held unless there are present at least one half of the members. Provided, however, that if such quorum be unobtainable on account of unavoidable reasons, as for example travel, sickness, etc., and if the business necessities of the Bank call for immediate action by the Chief Officers' Council, then such members as are present may make decisions, and the particulars of such decisions shall be reported at the next meeting of the Chief Officers' Council.

Decisions of the Chief Officers' Council shall be made by a majority vote; provided that in case of a tie the Chairman shall decide.

Article 27. All decisions made by the Chief Officers' Council shall be entered in the minutes of the Council, to which the members present shall attach their signatures.

CHAPTER V.

General Meeting of Shareholders.

Article 28. A General Meeting of Shareholders shall be either ordinary or extraordinary.

Article 29. The Ordinary Meeting of Shareholders shall be held twice each year in the months of February and August. The President, at least three weeks previously to the day appointed, shall give notice to each holder of registered shares and make advertisement of the day, hour, place, and purpose of the meeting as well as the subjects to be discussed. (Amended, February, 1906.)

An Ordinary Meeting of the Shareholders shall examine the documents presented by the President, in accordance with the provisions of Article 190 of the Commercial Code, and also the report presented by the Auditors; and shall also decide questions relating to the declaration of dividends.

Article 30. An Extraordinary Meeting of Shareholders shall be convened by the President, should he consider such a step necessary, or should he be requested to do so; provided that such request must be accompanied by a statement of the objects of the Meeting and the reasons for convening it, and must be signed by shareholders who own shares amounting to at least one-tenth part of the entire capital of the Bank. The President shall fix the day, hour and place of the Meeting and shall notify these as well as the object of the Meeting and the subject or subjects to be discussed there, to each holder of registered shares and shall make advertisement at least three weeks prior to the Meeting. (Amended, February, 1906.)

An Extraordinary Meeting of Shareholders shall also be held when considered necessary by the Auditors.

In case the holders of unregistered shares wish to make the request mentioned in the first paragraph they shall place their shares in the custody of the Bank. (Added, February, 1906.)

Article 31. Every shareholder shall have the right of one vote for each share owned by him.

Article 31-2. The holders of unregistered shares cannot use their power of voting unless they place their shares in the custody of the Bank one week before the day of the Meeting. (Added, February, 1906.)

Article 32. A shareholder may vote at a General Meeting of Shareholders through a representative: but only a legal representative or a shareholder of the Bank may act as such.

The Bank's Chief Officers and other employés may not in any case perform the representative functions mentioned in the last paragraph except when acting as legal representatives.

Article 33. Persons intending to act as representatives at a General Meeting of Shareholders shall present documents duly certifying the powers entrusted to them.

Article 34. (Struck out, February, 1906.)

Article 35. (Struck out, February, 1906.)

Article 36. All decisions adopted at a General Meeting of Shareholders shall be recorded in the minutes of the meeting, and the signatures of the President, Vice-President, Directors and Auditors shall be appended. (Amended, February, 1906.)

Article 37. The members present at a General Meeting of Shareholders shall record their names, representatives stating themselves to be such, in a book kept for that purpose on the day of the Meeting and prior to its opening.

The book containing the names of the members present shall, after receiving the signatures of the President, Vice-President, Directors and Auditors, be appended to the minutes of the Meeting. (Amended, February, 1906.)

CHAPTER VI.

Business.

Article 38. The Bank shall engage in the following lines of business:—

1. Making loans on the security of national loan-bonds, prefectural or municipal loan-bonds, or the debentures and shares of companies.
2. Subscribing for, or taking over by transfer, national loan-bonds, prefectural or municipal loan-bonds, or debentures of companies.
3. Receiving deposits of money and undertaking the custody of goods entrusted to it for safe keeping.
4. Undertaking trust business. (Amended, May, 1905.)
5. Discounting bills, (Added, May, 1905, and Amended, May, 1911.)
6. Buying and selling Bills of Exchange and Documentary Bills of Exchange. (Added, June, 1914.)
7. Making loans on the security of estates (zaidan) created by virtue of special laws. (Added, May, 1905.)
8. Making loans on the security of land and buildings belonging to factories. (Added, May, 1911.)
9. Making loans on the security of land and buildings in cities and in towns assigned by Imperial Ordinance. (Added, May, 1911.)
10. Carrying on business sanctioned by the Minister of State for Finance in accordance with Laws or Ordinances. (Added, May, 1905.)

The total sum of loans mentioned in No. 8 and No. 9 of the preceding paragraph shall in no case exceed half the amount of its paid-up capital. (Added, May, 1911.)

Article 39. The trust business to be undertaken by the Bank shall be in general as follows: (Amended, May, 1905.)

1. Undertaking duties of administration, settlement, etc., with reference to money, securities, movable and immovable properties and other properties.

2. Managing matters with reference to public loans, and loans or shares of companies such as issuing bonds or debentures, paying principal, interest, dividends, etc.
3. Managing matters with reference to mortgaging debentures or to giving guarantees on behalf of debtors.

Article 40. Loans made by the Bank shall never be for a longer term than five years; except in cases of special necessity. (Amended, January, 1903.)

Article 41. This Bank may devote such of its funds as are not employed in regular business to the purchase of national loan-bonds, prefectural or municipal loan-bonds, or the debentures and shares of companies or gold and silver bullions. (Amended, May, 1911.)

Article 42. The Bank may not come into possession of or receive as objects of mortgage, its own shares or debentures. An exception may be made, however, in the case when the Bank comes into possession of its own debentures for the purpose of redemption by purchase. (Amended, May, 1905.)

Article 43. The Bank may not come into possession of real estate except in the cases mentioned below :—

1. Lands and houses necessary for its business purposes.
2. Real estate received in liquidation of debts.
3. Real estate received through the decisions of courts of justice.

The real estate mentioned in clauses 2 and 3 of the preceding paragraph shall be speedily disposed of by the Bank.

Article 44. The Officers and other employees of the Bank are not allowed to become its debtors.

CHAPTER VII.

DEBENTURES.

Article 45. The debentures issued by the Bank shall be of the face value of at least fifty *yen* and unregistered. They may, however, be changed into registered debentures at the request of subscribers or owners.

Article 46. The maximum amount of debentures which the Bank may issue shall be ten times the amount of its paid-up capital; but the actual amount of such debentures shall in no case exceed the aggregate value of the assets represented by the moneys the Bank has loaned out at the time, the bills it has discounted and retains in its possession, and the national loan-bonds, prefectural and municipal loan-bonds as well as the debentures of companies in possession, all calculated at their market values. Exceptions may be made, however, when debentures are to be issued at a reduced rate of interest in order to replace therewith others previously issued; or when they are issued in accordance with Article 12-2 of the Law of the Nippon Kogyo Ginko. (Amended, May, 1905, and May, 1911.)

Article 47. The interest on this Bank's debentures shall be paid twice each year, in the months fixed at the time the said debentures are issued. An exception may be made, however, with regard to the interest on the debentures issued in accordance with Article 12-2 of the Law of the Nippon Kogyo Ginko. (Amended, May, 1905.)

Article 48. The debentures shall be redeemed within the term of thirty years reckoned from the year of their issue, and the redemption may be effected by the process of drawing lots, according to the convenience of the Bank. An exception may be made, however, in the case of redeeming the debentures issued by virtue of Article 12-2 of the Law of the Nippon Kogyo Ginko. (Amended, May, 1905.)

Article 49. If debentures or interest-coupons are reported to be destroyed, lost or stolen, the Bank shall make a public announcement and not until they have been declared void of value shall the Bank deliver new debentures or interest-coupons. In the case of registered debentures the rules laid down in Articles 11, 12, 13 and 14 shall be applied.

The expense connected with the issue of a public announcement shall be borne by the owner of the said debentures or interest-coupons.

Article 50. When registered debentures are converted into unregistered, or *vice versâ*, or when new debentures are delivered in place of debentures which have been either destroyed, lost, stolen, defaced or mutilated, the Bank shall demand a fee of thirty *sen* for each debenture.

When the names registered on debentures are to be changed, a fee of fifteen *sen* shall be demanded for each debenture.

Article 51. Should the Bank find that loans made by it, which constitute the basis of the debentures issued, are not paid back as stipulated, or should it fail to obtain full redemption of the debentures of companies which it holds, it shall redeem a part of its own debentures so as to reduce their total amount by an amount corresponding to the said unpaid loans or unredeemed debentures of companies; or, as an alternative, it shall make good the above deficit with other negotiable instruments.

Article 52. Should national loan-bonds, prefectural or municipal loan-bonds or the debentures of companies owned by the Banks depreciate in value below the required limit laid down in Article 46, the Bank shall make good the deficit either by furnishing other national loan-bonds, prefectural or municipal loan-bonds, or the debentures of companies; or by redeeming such an amount as shall restore the prescribed balance. (Amended, May, 1905, and May, 1911.)

CHAPTER VIII.

ACCOUNTS.

Article 53. The business year of the Bank shall be from January to June and from July to December of each year.

The President shall, at the end of each business year, draw up the balance sheet of debit and credit, the business report, as well as the various accounts; and shall prepare a list of assessed properties, the profit and loss account and the proposed rate of dividend to be declared, all of which documents shall be presented to the Ordinary General Meeting of Shareholders.

Article 54. Concerning the method of dividing the profits, the Bank shall first deduct from the gross profits the various payments to be made, the interest to be paid, the salaries and travelling expenses and all other business outlays as well as the various losses if any and then taking the remaining amount as the net profit, shall divide it as follows:—

1. Eight per cent or more of the net profit, as a reserve against losses.
2. Two per cent or more of the net profit, as a dividend equalization reserve.
3. After the above two items have been deducted, an amount corresponding to five per cent per annum of the paid-up capital of the Bank shall be set apart from the remaining portion of the net profit and shall be regarded as the first dividend to be declared.

After the above three items have been deducted, ten per cent. or less of the remaining portion of the net profit shall be set apart as a bonus to the Chief Officers of the Bank; and if, after these four items have been deducted, there be any remaining ~~portion~~, it shall be divided among the shareholders as a second dividend, or appropriated to a special reserve fund or transferred to the next year's accounts. (Amended, January, 1903.)

Article 55. Should the net profit of the Bank, after subtracting the appropriations for the first and second reserves mentioned in the preceding Article, fall short of a sum representing five per cent of the paid-up capital, then the Bank shall receive from the Government a subsidy sufficient to enable the Bank to pay a dividend of five per cent.; and the period of the Government's liability under this article shall be limited to 5 years, reckoned from the Bank's first business-year.

Article 56. The reserve against losses is intended to make up any deficit in the capital of the Bank caused by losses in business.

The dividend equalization reserve is intended to ensure as far as possible the payment of a uniform rate of dividend not less than five per cent.

During five years reckoned from the first business year, the reserves mentioned in the foregoing paragraphs shall be applied only in the event of a deficiency still remaining after the stipulated Government subsidy has been received.

Article 57. The Bank may not divide any profit among its shareholders without the permission of the ~~Minister~~ of State for Finance.

The date of the payment of dividends shall be fixed by the President, and a notification shall be issued to the holders of registered shares and an advertisement shall be made. (Amended, February, 1906.)

Appendix XIV.

Extracts from the Report to the Board of Trade by the Committee appointed to investigate the question of Financial Facilities for Trade.

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2. In view, however, of statements made by witnesses, it is desirable that we should state clearly our definitions of banking facilities in the British sense, and of what we would call by the wider name of financial facilities. The former are properly limited to those which can be provided without a "lock-up" such as would impair the liquidity of funds and deposits at call and short notice. For this reason the usual practice of bankers here is to confine their advances as a rule to a currency not exceeding a few months. By financial facilities we mean, generally speaking, those which would involve a longer currency than this.

3. A careful study of the evidence above referred to, and our own knowledge of banking arrangements and facilities, lead us to the conclusion that there exists to a considerable extent at the present time in this country the machinery and facilities for the finance alike of home trade and of large overseas contracts, and for carrying through much of the business which has been done by foreign banks. The British banks afford, we believe, liberal accommodation to the home producer. British bankers are not shy in making advances on the strength of their customers' known ability and integrity, and the charges for accommodation are we believe often lower than the corresponding charges in foreign countries. Similarly, the Colonial banks and British-Foreign banks and banking houses render immense assistance to British trade abroad, and certainly in the Far East and in many parts of South America British banking facilities do not fall short of those of any other nation. We find also that in the case of large contract operations British contractors with the assistance of Financial Houses have in the past been ready to provide large amounts of capital and to take considerable risks in connection with the operations which they have undertaken.

4. Our arrangements, however, are faulty in our not co-ordinating many of the facilities mentioned in the previous paragraph. We recognise also that the British manufacturer may be frequently in want of finance of a kind which a British Joint Stock Bank with liabilities as above described could not prudently provide, whereas the German Banks in particular seem to have been able to afford special assistance at the inception of undertakings of the most varied description, and to have laid themselves out for stimulating their promotion and for carrying them through to a successful completion. We conclude therefore that there is ample room for an Institution which, while not interfering unduly with the ordinary business done by the British Joint Stock Banks, by Colonial Banks, and by British-Foreign Banks and Banking Houses, would be able to assist British interests in a manner that is not possible under existing conditions.

5. Such an Institution might in many ways be beneficial to the development of British industry and manufactures. It might in certain cases, after careful examination, agree to make advances for the extension of existing manufacturing plant, or perhaps for the amalgamation or co-ordination of certain works so as to reduce the cost of production. It would assist these works to obtain orders abroad, and give them reasonable financial facilities for executing these orders. It should give a preference in matters of finance to orders which are to be executed in this country.

6. Such an Institution could also take a leading part in the inception of transactions and assist in connection with the machinery of overseas business. In the case of German manufacturers it frequently happens that on the Board of the manufacturing company there is a representative of a bank, and there seems little doubt from an examination of the information which is available that the German banks have exercised an amount of control over the manufacturing concerns in which they are interested, which would not be possible, even if it were desirable, in the United Kingdom. A large number of our manufacturing undertakings are wealthy concerns and would not tolerate for one moment interference by bankers in their affairs, and indeed would probably resent any enquiry into the nature of their business arrangements. Such manufacturing concerns however do require assistance when they transact overseas business. Take as a single instance the case of a Midland manufacturer selling goods to Italy. The Italian buyer has been accustomed to long credit, and if long credit is refused the business will probably be impossible. The manufacturer sells goods for, say £50,000 and the payment of that price would leave him with a considerable margin of profit, but the offer of the Italian buyer to pay him the equivalent of £50,000 in lire at six or twelve months is not attractive. He would much rather accept a lower figure than £50,000 for a clean cash transaction in sterling, and it is in connection with such business as this that an Institution of the kind contemplated would be able to act as intermediary (taking part or the whole of the financial liability) with profit to itself and satisfaction to the manufacturer.

7. Or to take another case, that of a contractor who has entered into a contract with a foreign Government, payment being made as works proceeded, such payment being possibly in paper in a foreign currency, the contractor in that circumstance would willingly share a profit with an Institution which would be responsible for the finance of the securities receivable by him.

8. It would be essential in conducting business with manufacturers and merchants, that the Institution should draw and accept bills, and it should generally be in a position to undertake credit operations. It might be well to provide that a certain portion of uncalled capital or a portion of paid-up capital (if it is deemed wise to have all called up) should be reserved against this class of risk.

9. If an Institution is formed to carry out transactions of the kinds indicated in paragraphs 3 to 8 above, it follows that it must be equipped with knowledge of affairs in the countries with which it may do business, and its managers must, by personal visits, acquaint themselves with the conditions of business in all important foreign centres. It must have either branches or agencies in those countries, and in this connection the exceptional position held by British-Foreign and Colonial Banks should be fully availed of. Instead of having to organise, as was the case with German Banks, new subsidiary undertakings, the Institution would largely use, under agreement, the existing banks and the facilities which they can

The Institution must be equipped with an up-to-date Information Department and this will of necessity play a large part in its usefulness and financial success. This might be called a Bureau d'Etudes, independent of the Commercial Intelligence Branch of the Board of Trade, but in close touch therewith and under agreement entitled to all possible

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16. If financial assistance is given by the Government to undertakings in connection with what are known as "key" industries, the business should, if possible, be done through the medium of the Institution, and it should be appointed an agent for carrying through any foreign commercial and financial transaction in which the Government may be interested.

19. Foreign banks have, in most of their operations, adopted the course of forming syndicates to undertake any business of considerable magnitude. They have headed such syndicates and they have taken the labouring oar in connection with investigations. The members of the syndicate have generally included other banks, and associated with them have been those who were particularly interested in the class of business proposed to be done. Syndicates are formed after the first superficial enquiry as satisfied the banks that there is apparently a good business to be done. Directly this point is reached, the expenditure in connection with thorough investigation is on account of the syndicate. If the business is ultimately proceeded with, the profits or losses on the wind-up of the business are shared pro rata after allowance to the bank for management. Some such procedure should be followed here. It would enable the Institution to undertake business of a comprehensive character, and its "imprimator" would have value when issues were made to the public.

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21. In the financial operations of the Institution the desirability of assisting British trade and of placing with British manufacturers orders in connection with new undertakings should be always borne in mind.

22. It is desirable that the Institution without coming under Government control should receive as much official recognition as possible. Our Foreign Office should, for instance, be asked to instruct British Embassies and Legations abroad to put the Institution's representatives in contact with all Commercial Attachés, Consuls, etc., with clear instructions to them that the Institution is a commercial concern enjoying the full confidence and approval of the Government; and similar instructions should be given by the Board of Trade to their Trade Commissioners in the Dominions.

23. Having assured ourselves that the creation of an Institution of the character referred to above would not unduly interfere with existing Banks, Banking Houses, or Financial Institutions, we recommend the formation of a new Bank to fill the gap between the Home Banks and the Colonial and British-Foreign Banks and Banking Houses, and to develop facilities not provided by the present systems.

24. The Bank should be called the "British Trade Bank" and should be constituted under Royal Charter.

Its chief features should be as follows:—

(I) It should have a capital of £10,000,000. The first issue should be from £2,500,000 to £5,000,000 upon which in the first instance only a small amount should be paid up, but which should all be called up within a reasonable time. A further issue should be made afterwards, if possible, at a premium.

(II) It should not accept deposits at call or short notice.

(III) It should only open current accounts for parties who are proposing to make use of the overseas facilities which it would afford.

(IV) It should have a Foreign Exchange Department where special facilities might be afforded for dealing with bills in foreign currency.

(V) It should open a Credit Department for the issue of credits to parties at home and abroad.

(VI) It should enter into banking agency arrangements with existing Colonial or British-Foreign Banks wherever they could be concluded upon reasonable terms, and where such arrangements were made, it should undertake not to set up for a specified period its own Branches or Agencies. It should have power to set up Branches or Agencies where no British-Foreign Bank of importance exists.

(VII) It should inaugurate an Information Bureau upon the lines indicated in paragraphs 10 and 11.

(VIII) It should endeavour not to interfere in any business for which existing Banks and Banking Houses now provide facilities, and it should try to promote working transactions on joint account with other Banks, and should invite other Banks to submit to it new transactions which, owing to length of time, magnitude or other reasons, they are not prepared to undertake alone.

(IX) Where desirable, it should co-operate with the manufacturer and possibly accept risks upon joint account.

(X) It should become a centre for syndicate operations, availing itself of the knowledge which it will possess through its Information Bureau.

(XI) It should receive Government assistance in the ways referred to in paragraphs 18 and 22.

25. We are of opinion that there are strong reasons why the Bank should be formed without delay so that preliminaries may be completed before the War is over. Our enemies are sure to make at the earliest moment strenuous efforts to regain their position in the world of commerce and finance, and it may well be that when peace comes, unemployment may be rife at home unless new markets are exploited. It seems to us desirable, therefore, to ascertain in advance the requirements of foreign countries and the whereabouts of raw materials for our industries.

26. We believe that a Bank constituted upon the above bases, with efficient management, should not only be a great boon to British trade but should prove a commercial success.

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Appendix XV.

Extracts from the Charter of Incorporation of the British Trade Corporation.

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II. The Institution hereby incorporated (hereafter in this Our Charter referred to as "the Corporation,") shall be established for a term of sixty years commencing from the date of this Our Charter for the purpose of carrying on the businesses of trading and banking in any part of the world, either by branches, agencies or otherwise, and particularly (but without restricting the general scope of such businesses in any of their branches) with the following powers, objects and rights which shall nevertheless be exercised at all times subject to due conformity with the laws of the respective countries concerned, with due regard to the interest of Our Government:—

(*a*) To act as agents for any Governments or Authorities, or for any Bankers, Manufacturers, Merchants, Shippers and others, and to carry on agency business of any description including the power to act as attorneys and to give discharges and receipts.

(*b*) To carry on business as Contractors, Merchants or Traders on their own account.

(*c*) To promote or finance or to assist in the promotion or financing of businesses and undertakings of any description, and to develop and prove the same, either through the instrumentality of syndicates or otherwise, and to act as an Issuing House.

(*d*) To enter into any partnership or other arrangements for sharing profits or on joint account.

(*e*) To acquire and hold or dispose of any shares, stock, bonds, obligations, debentures, debenture stock, scrip or other securities or interests of any Companies, Trusts, or Corporations, or of any Governments, States, Provinces, Municipalities or other authorities.

(*f*) To acquire and hold or dispose of any interest in any Railways, Tramways, Ships, Canals, Docks, Harbours, Armament Works, Ship-Building Establishments, Irrigation Works, Electrical Works, Gas Works, Water Works, and in addition any carrying, transporting, trading, industrial, agricultural, financial, or manufacturing works, concerns, or business of any description, and to carry on the same.

(*g*) To acquire and hold any interest in and to develop the resources of, and turn to account, deal with, pledge, and dispose of any territories, forests, mineral fields or other lands, possessions, buildings or property, real or personal, immovable or movable, in any part of the world, including lands, buildings and other hereditaments in the British Islands notwithstanding the provisions of any Statutes of Mortmain or any other statutes or laws to the contrary.

(*h*) To undertake and execute any Trusts and to act as Executors, Administrators, Receivers and Treasurers, and to give any guarantees.

(*j*) To obtain, work or dispose of any Concessions, Charters, Acts of Parliament, or other legislative rights, Monopolies, Licenses, Patents, Copyrights or other privileges or advantages.

(*k*) To establish and maintain Information and Investigation Bureaux, and to collect statistics, returns, particulars and information likely to prove useful for the consideration of business and financial propositions, and to undertake experimental and research work.

(*l*) On behalf of any Governments, Authorities or Corporations to keep any registers relating to any stocks, shares, debentures, debenture stock, or securities, and to undertake any duties in relation to the registration of transfers, issuing of certificates, or otherwise.

* * * * *

IV. In any cases in which as the result of arrangements between Our Government of the United Kingdom and any other Government whether the Government of a British Possession, Protectorate or a Foreign Government, Our Government is desirous that British capital shall participate in financial operations not falling within the terms of any agreements or arrangements with other parties which may be existing at the date of this Our Charter and requires an agent for the representation of British interests so far as relates to trade or business We do hereby, but without in any way limiting or modifying the powers and rights by this Our Charter elsewhere conferred, grant and confer on the Corporation the right in such cases of being such agent of Our Government provided nevertheless that Our Government shall be entitled to appoint another agent or other agents and either in lieu of or in addition to the Corporation in any special case in which such a course shall appear to Our Government to be necessary or expedient.

V. The Share Capital of the Corporation shall be the sum of Ten million pounds sterling, with power to the Corporation from time to time by Extraordinary Resolution as defined by the Deed of Settlement hereinafter referred to, to increase such Share Capital, and with power to borrow or pledge the credit of the Corporation to such amount and in such manner as the said Deed of Settlement shall from time to time provide.

VI. The Corporation shall not commence business until at least £1,000,000 sterling of the capital has been subscribed, and at least one-fourth part of that sum has been actually paid up.

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IX. The Corporation shall be regulated in accordance with a Deed of Settlement, the draft of which shall be approved by the Lords Commissioners of our Treasury before it is executed and if the Lords Commissioners of Our Treasury certify to Us that the draft so approved is not executed within twelve months after the date of this Our Charter, it shall be lawful for us, Our Heirs and Successors, at any time thereafter, by writing, under Our Great Seal, to declare this Our Charter be absolutely void.

X. Such Deed of Settlement shall contain provisions for the head and controlling office of the Corporation being in England, for the Corporation being regulated by a controlling Board of Directors in England, for the holding in England of the controlling Board and General Meetings of the Corporation, and for Special and Extraordinary Resolutions being passed in like manner as Special and Extraordinary Resolutions under the Companies (Consolidation) Act, 1908, or any statutory modification or re-enactment thereof, for the prohibition of the issue of share warrants to Bearer, for the keeping of a Register of Members and a Register of Mortgages, for the making of returns to Our Board of Trade, for the publication of Statements, for the Corporation allowing inspection to be made of the Register of Members and the Register of Mortgages and furnishing copies of the Register of Members and of the matters comprised in the Corporation's returns to Our Board of Trade, for the notification to Our Board of Trade of the situation of the head and controlling office of the Corporation and of any change therein (which provisions We hereby Ordain shall not be altered without the consent of Our Board of Trade). Subject to such provisions as aforesaid being made and retained, unless altered with such consent as aforesaid, the Deed of Settlement may be altered by Special Resolution of the Corporation: Provided always that such alterations shall not be contrary to anything in this Our Charter contained.

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